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THE MADRAS

QUARTERLY JOURNAL

OF

MEDICAL SCIENCE.

EDITED BY

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PART I.

ORIGINAL ESSAYS.

ART. I.—*Notes upon the Land and Fresh-water Snakes of the Madras Presidency.* By Captain R. H. BEDDOME.

THIS Catalogue was prepared in England, for my own use, from the British Museum catalogues, and from several papers by Drs. Gray, Günther, and Peters, and from my own collection of nearly 200 species which I took to England and compared at the British Museum.

SUB-ORDER VIPERINÆ.

Jaws weak, upper toothless, with fangs in front, lower toothed; ventral shields broad, band-like; head large behind, crown flat, generally scaly, rarely shielded; hinder labials not developed; eyes lateral; nostrils apical, lateral. Venemous.

§ 1. *Crotalidæ.*—Face with a pit between the eyes and nostril.

§ 2. *Viperidæ.*—Face without any pit.

§ 1. CROTALIDÆ.

Face with a large pit on each side; head large behind; crown flat, scaly or shielded; jaws weak, the upper one with long fangs in front and no teeth; belly covered with broad band-like shields; anal spurs none.

A. Head covered with scales; small shields on the edge of the fore-head and eye-brows; tail ending in a spine; cheeks scaly; sub-caudal plates two rowed.

1. *Trimesurus.*—Superciliary shield single; hinder labial shields smallest; scales lanceolate, keeled.

B. Head more or less shielded; sub-caudal plates two rowed; tail ending in a spine; cheeks not scaly; head shields with some additional plates in front.

2. *Trigonocephalus.*—Dorsal scales keeled; crown with large subnormal shield.

TRIMESURUS.

1. *Trimesurus Viridis* (Gray, Zool. Misc. 48); [Bodroo Pam. Russell, Ind. Serp. 1; t. 97, t. 20].—Superciliary shield half ovate; head shields smooth; scales of the body obscurely keeled; color bright-green; 21 rows of scales; scutæ 146 to 164; scutellæ 58 to 64.

Anamallay Hills, rare. Condapilly Hills, common.

2. *Trimesurus Strigatus* (Gray, Zool. Misc. 48).—Olive with large dark spots on the back; crown with two white spots on the hinder part, a broad streak from the back of the eyes; two triangular bands on the white upper lip; beneath white marbled with dark olive.

Anamallay Hills.

3. *Trimesurus Malabaricus* (Jerd.).—Green, greenish brown, or brown, above, with brown, zigzag markings; 21 rows of smooth scales; scutæ 145 to 158; scutellæ 48 to 54; belly often mottled with purple.

Anamallays; Neilgherries; very common up to 3,000 feet elevation, but generally in the moist forests only, up to 2 feet in length.

4. *Trimesurus Neilgherriensis* (Jerd.).—Dark brown with black markings; 23 rows of carinated scales; scutæ 142; scutellæ 36.

Neilgherries.

5. *Trimesurus Wardii* (Jerd.).—Greenish, with purplish brown diamond spots on back and sides; 12 to 14 in. long.

Neilgherries.

6. *Trimesurus Macrolepis* (Bedd.).—Dark green, lighter below; the lowermost row of scales on each side white, forming a white line on each side of the abdomen; scales in 12—14 rows, very large; the lowest row smallest, all pointed and very prominently carinated; head covered with

Head of a Snake

1. Upper Surface.

2. Under Surface.

a. Vertical.
b. Occipitals.
c. Supercilliars.
d. Temporals.
e. Posterior frontals.
f. Anterior frontals.
g. Rostral.
h. Posterior oculars.
j. Anterior oculars.
k. Loreal.

l. Nasal.
m. Marginal labials.
n. Middle labials.
o. Accessory labial.
p. Anterior genials.
q. Posterior genials.
r. Marginal labials.
s. Gular scales.
t. Gular scuta.
w. Abdominal scuta.

very large plate-like scales ; scutæ 133 to 138 ; sub-caudals 53 to 56 pair ; rostral triangular, erect.—Vide fig. No. 6.

Anamallay Mountains ; common in the grass at 6,000 feet elevation. I also procured a specimen on the Pulney Hills in the moist forests at 4,000 feet elevation.

TRIGONOCEPHALUS.

1. *Trigonocephalus Hypnale* (Wagler, Syst. 174) ; [Cophias Hypnale, Merrem].—Scales keeled; lips brown, white spotted; brown, sides darker and marbled ; tail brown, cross banded ; head brown, marbled, with a broad white streak on each side, extending down the back of the neck which is streaked with brown ; nose more or less produced ; upper surface covered with small scale-like shields ; scales in 17 to 19 rows ; scutæ 136 to 142 ; sub-caudals 39 to 44 pair.

Anamallays ; Wynaud ; very common.

2. *Trigonocephalus Elliottii* (Jerd.).—Olive green above, white beneath ; 23 rows of scales ; scutæ 151 ; scutellæ 43 ; of massive form ; 2 feet long and upwards.

Lower slopes of the Neilgherries.

§ 2. VIPERIDÆ.

Rostral shields broad, band-like ; scales keeled ; tail short, tapering.

+ Head depressed, rounded on the sides, covered with acutely keeled scales.

1. *Daboia.*—Nostrils large, sub-superior, anterior, in the centre of a ring-like shield, edged with a large scale above ; eyes convex, pupil round ; head elongate ; scales regularly keeled ; nasal shield smooth in front ; superciliary shield narrow, elongate, distinct.

2. *Echis.*—Nostrils small, sub-anterior, sub-lateral ; sub-caudal plates two rowed ; nostrils minute in suture of two small scales ; the anterior frontal shields minute, smooth ; pupil round, eyes surrounded by small scales.

DABOIA.

1. *Daboia Elegans* (Gray, Zool. Misc. 69) ; [Russell, Ind. Serp. 1—10].—Brown, with three rows of white-edged, oblong, brown spots ; two brown spots on each side of the occiput, separated by a narrow, oblique, yellow, temporal streak.

Common in the plains of India, grows to a very large size.

Scutæ 168 ; sub-caudals 52.

ECHIS.

1. *Echis Carinata* (Merrem, Tent. 149); [Russell, l. c. 177].—Superciliary scales elongate, larger than the others; gray brown with angular white streaks; crown of the head dark, with large, dark-edged, oblong spots.

Very common on the hills on the Eastern Coast.

Scutæ 168; sub-caudals 52.

SUB-ORDER COLUBRINÆ.

Jaws strong, both toothed, sometimes with some fangs in front, or grooved teeth behind; head moderate or indistinct; crown often covered with regular shields.

† Belly covered with narrow elongate shields or scales, nearly resembling those of the back.

§ 1. *Boidæ*.—Vent with spur-like rudimentary feet on each side; eyes and nostrils lateral; tail conical, generally prehensile; ventral shield narrow, transverse, band-like.

§ 2. *Hydridæ*.—Vent spurless; nostrils superior, valvular; eyes superior, pupil round; tail often compressed; belly covered with narrow shields or with scales like those of the back; the central series sometimes united together in pairs forming a six-sided shield.

†† Belly covered with broad band-like shields; vent without any spur-like feet; tail conical, tapering.

§ 3. *Colubridæ*.—Nostrils apical, lateral, open; head generally shielded.

§ 1. BOIDÆ.

Ventral shields often six-sided; hinder limbs developed under the skin, formed of several bones and ending in an exserted, horny spur, placed one on each side of the vent. Not venemous.

† Tail prehensile, strong; head distinct; muzzle truncated.

Sub-caudal plate two rowed; intermaxillary or incisive teeth distinct; superciliary bone distinct.

I. *Python*.—Upper and lower labial shields deeply pitted; muzzle and forehead with symmetrical shields; nostrils vertical.

†† Tail very short, slightly or not prehensile; head indistinct, short.

A. Head covered with scales; pupil oblong; scales convex; sub-caudal shield one rowed; intermaxillary teeth none; supra-orbital bone none.

II. *Gongylophis.*—Muzzle wedge-shaped; jaws equal; head with small-keeled scales; scales of back keeled; body fusiform.

III. *Clothonia.*—Muzzle wedge-shaped; upper jaw largest; scales smooth.

B. Head shielded; pupil round.

IV. *Cylindrophis.*—Nostrils in a single shield; eyes surrounded by shield; intermaxillary teeth none.

Python.

Crown of the head shielded to behind the eyes; head covered with scales; rostral and upper and lower labials pitted: nostrils perpendicular, vertical between two unequal sized plates, the hinder sometimes divided by a groove into two; eyes lateral, pupil linear, erect; scales smooth; sub-caudal plates two rowed.

1. *Python Molurus* (Gray, Zool. Misc. 44); [Russell, l. c. t. 39—t. 22—24.].—The front and hinder lower labial shields moderately wide, equal; the smallest of the two nasal plates with a longitudinal groove; the frontal plate divided into two longitudinally and followed by other symmetrical plates; one supra-ocular on each side; rostral plates with two front pair of upper, and three hinder pair of lower, labial shields pitted.

The rock snake. Very common all over India, growing to a very large size.

Gongylophis.

Head covered with small keeled scales; muzzle shelving, rather produced, beneath covered with shields; frontal one pair moderate; nose truncated or cut square; rostral wedge-shaped; jaws equally long; throat-fold none; nostrils lateral, triangular, linear between three plates, one internasal and two nasals; eyes lateral; pupil elliptical, erect; body fusiform; tail conical with a conical scale at the tip; scales of the back and tail keeled, convex.

1. *Gongylophis Conica* (Gray, Zool. Misc. 45); [Russell, l. c. l. 5, t. 4.].—Pale brown with dark, confluent, lozenge shaped cross-bands on the back; sides brown marbled. Not uncommon in the plains of the Peninsula.

Scutæ 209; sub-caudals 19.

Clothonia.

Head covered with small, symmetrical, smooth scales; muzzle shielded with one pair internasals and one pair front

nasals; nose wedge-shaped; rostral wedge-shaped, very broad, subtriangular; upper jaw rather the longest; throat with a distinct fold; body subcylindrical; scales small, of the middle of the back convex; of the sides flat, smooth; two lower series the largest; tail triangular, scarcely tapering, and tip covered with a large three-sided scale.

1. *Clothonia Johnii* (Gray, Zool. Misc. 45); [Russell, l. c. 11, t. 26, 17.]; [Tortrix Eryx. Schlegel, Phys. Serp. II. 18, 11.].—Reddish brown, one series of scales between eyes and labial shields; young, bright colored. Fig. 17, Russell's Ind. Serp. is the young.

Not uncommon. This snake is often taken about by the snake charmers with their cobras.

Cylindrophis.

Head small; cylindrical-like body; muzzle depressed, rounded; no hinder frontal bone; eyes between shields without any plate on each side; tail cylindrical, not prehensile; anal spur very small, hidden; tail compressed; nasal plates large; frontal plates moderate; eyes surrounded by the labial, superciliary and temporal plates, and sometimes by a small posterior ocular plate.

1. *Cylindrophis Maculata.*—(Wagler, Syst. 195); [Russell, l. c. 11, t. 29.].—Tail conical; muzzle narrow; red or brown, black netted, beneath whitish; tail conical, shorter than the head.

Dr. Jerdon mentions two other species in his catalogue, but does not give descriptions.

§ 2. Hydridæ.

§ 1. Tail compressed (rarely conical); belly keeled with two rows of small scale-like shields, often united together into a single rather broad six-sided shield.

† Head covered with scales like the body; nostrils surrounded by a small continuous ring; eyes surrounded by a series of small scales; labial shields small, with a larger series above them; pupil round; ventral shields very small, scale-like, separated on each side by a keeled ridge.

Rivers.

Chersydrus.

Tail compressed, prehensile, sword shaped; body fusiform, covered with small rhombic scales with a central tubercular keel.

1. *Chersydrus Annulatus* (Gray.); [C. Granulatus, var. Gray, Zool. Misc. 63].—Black with broad yellow rings, which are generally interrupted on the back; head with many yellow spots; tail yellow ringed.

Estuaries and rivers.

ACROCHORDUS.

Tail moderate, conical, tapering; body fusiform, covered with tricuspid scales.

1. *Acrochordus Javanicus.* (Schlegel, Phys. Serp. II, 428.)—Adult brown, young brown with darker bands and streaks. Rivers.

§ 11. Tail conical, tapering; belly rounded beneath with more or less broad, band-like shields.

Rivers and ponds.

† Head shielded; scales striated and keeled or smooth; tail conical, tapering, with two series of shields beneath; nostrils in centre of a large nasal shield with a groove on the outer side; ventral shields rounded (or rarely keeled on the sides); frontal shields three, rarely two or four, all small.

A. Crown scaly; occipital rudimentary; frontals four, anterior pair very small.

CERBERUS.

Head dilated behind; crown scaly; face shielded to the eyes; anterior frontal small; superciliary small; vertical rudimentary or none; occipital none; front upper labial shields narrow and high; hinder low, divided; loreal small; one or two small shields under the eyes; body elongate, round; tail conical; scales all keeled very minutely and longitudinally striated.

1. *Cerberus Cinereus* (Gray, Zool. Misc. 64); [Russell, l. c. 1 t. 17.]; [Homalophis Rhynchops, Boie. Isis. xx. 550.].—Scales ovate, rounded at the end; brown with rather close, narrow, black cross bands; lips and throat white, black spotted; sides white; belly black, yellow mottled; tail blackish; sides slightly pale spotted (color darker when young); sixth labial under the eye, hinder one double.

Estuaries, common.—Scutæ 146; scutellæ 65.

B. Crown shielded; occipital shield moderate.

† Head distinct, depressed; frontal shields four, anterior two very small, triangular.

Ferania.

Head subcordate, dilated behind; eyes large; anterior frontal two pairs transverse; hinder upper labial divided; eye over the fourth labial; body compressed; scales smooth, lozenge shaped, in 29 longitudinal rows; back keeled; belly narrow, very convex; tail conical.

1. *Ferania Sieboldii* (Gray, Zool. Misc. 67); [Homalopsis Sieboldii, Schlegel, Phys. Serp. 349.].—Gray brown, irregularly cross banded, and a pale dorsal streak; crown with two diverging brown streaks and a central triangular spot behind; scutæ 147; sub-caudals 51.

†† Head distinct, depressed; frontals three; anterior triangular, tranverse, small; rostral rounded.

* The 4th and 5th hinder upper labial shields small, with similar shields over them.

Homalopsis.

Head dilated behind, swollen on the sides; crown and face shielded; anterior frontal (sometimes divided into two) triangular; vertebral and superciliary moderate; occipitals large; loreal elongate (or two short); the labial shields behind the eye, 6th to 9th divided; anterior ones narrow, high; one anterior large, and two posterior, oculars; eyes moderate; body thick, fusiform; scales strongly keeled, longitudinally striated; tail elongate.

1. *Homalopsis Buccata* (Schlegel, Phys. Serp. 337, t. 13, f. 1.); [Russell, l. c. 11, t. 33.].—Brown; lips and beneath pale whitish; back with narrow cross bands; belly with a series of brown spots on each side; head pale brown, marked with a triangular spot on the nose, a longitudinal streak on occiput, and a broad streak, including the eye, on each temple; eye surrounded with small scales; loreal one; scales about 39 rows; scutæ 160; sub-caudals 78.

** The hinder labial large like the others; scales keeled.

Tropidophis.

Head rather depressed; crown shielded; occipital shields large; nostrils sublateral, on the upper edge of a single shield with a groove beneath it; one high anterior and three posterior equal oculars; loreal single; labial shields moderate, uniform, 4th and 5th forming part of the orbit; hinder larger, undivided; eyes large, sublateral; body fusiform; scales keeled, ovate and longitudinally striated; tail short, conical.

1. *Tropidophis Schistosus* (Gray, Mus. Cat.) ; [Russell, l. c. 11, t. 4.] ; [Tropidonotus Schistosus, Schlegel, Phys. Serp. 319, n. 13].—Lead colored, black with obscure paleish lines ; lip, lower series of scales on the sides of the body, and beneath, white ; scales slightly keeled, marked with a pale central line, rather rounded at the end ; head elongate ; eyes large ; occipital shields very large, elongated behind ; one large anterior and three small posterior oculars ; the 4th and 5th upper labials moderate, equal, and both under the eye ; nostril on slope of face, but on a single plate with a groove on the outer side.

Tanks. Very common. Scutæ 150 ; sub-caudals 80.

*** The hinder labial large like others ; scales smooth.

HYPSIRHINA.

Head small, distinct, crown shielded; frontals three, anterior transverse, small ; vertebral and superciliary rather small ; occipital moderate ; loreal square ; upper labial large, entire ; seventh large; eye over the 4th, or 4th and 5th labial; body fusiform ; scales smooth ; tail conical.

1. *Hypsirhina Aer.* (Wagler, Syst. Amph. 170); [Homalopsis Olivaceus, Cantor.].—Eye over the 4th labial shield ; lower part of the side with a defined white streak ; lead colored, dark lateral streak narrow, formed by the outer edge of the ventral shields, beneath grey minutely dotted ; belly shields with three longitudinal black streaks ; head large, elongate; tail elongate, blackish with a series of white spots on each side beneath ; sub-caudal plates forming three narrow lines, black edged; scales in 23 to 25 series ; larger scales when nearly dry covered with small, irregular, blister-like convexities ; body 25 in., tail 6 in. long ; scutæ 150—148 ; sub-caudals 58—52.

In estuaries.

§ 3. COLUBRIDÆ.

Belly covered with broad band-like plates ; head covered with shields ; vent without any spur-like feet ; tail conical, tapering ; both jaws toothed.

A. Colubrine snakes without grooved or perforated fang in front. Not venemous.

FAM. 1. CALAMARIDÆ.

Body moderate, cylindrical, sometimes elongate, cylindrical ; *tail short*, cylindrical, rather tapering ; head not dis-

tinct from neck; muzzle rounded or pointed; *some shields always united;* cleft of mouth short; nostril lateral, small; eye generally small with round pupil; one anterior, two posterior, oculars; scales sometimes short and smooth, rounded behind, not much imbricate, sometimes rather elongate and keeled, 13 to 19 rows; ventral plates without keels; teeth generally equal and smooth, sometimes posterior maxillary tooth longest, sometimes grooved.

1. *Calamaria.*—Frontals one pair, scales 13 rows.

2. *Rhabdosoma.*—Frontals two pairs, loreal united with ante-ocular.

3. *Oligodon.*—No palatine teeth.

Calamaria.

Body stout or elongate; tail short; nasal one, pierced by nostril; loreal none (united with the frontal); one anterior, one posterior, ocular; upper labials four or five; scales smooth, rounded behind; anal entire; sub-caudals two-rowed; teeth equal, smooth.

1. *Calamaria Linnæii.*—(Linn., Syst. Nat. 1, p. 375); [C. Sagittaria, Cantor?]—Upper labials four; 1st pair of lower labials not forming a suture; above brownish, sometimes spotted; belly uniform blueish black, or marked with quadrangular black spots.

Anamallay Hills; rare.

My specimen had a regular row of spots along the back. the belly was uniform blueish black.

Rhabdosoma.

Front pair of frontals much smaller than hinder one; rostral rounded, small; two narrow nasals surrounding the nostril; anterior ocular none, (united with loreal); one posterior ocular; scales smooth, rounded behind, 13 (to 17) rows, anal entire; sub-caudals two rowed; teeth equal, smooth.

1. *Rhabdosoma Microcephalum.* (Günther, Mus. Cat. 11, 12.)—Upper labials five, the 2nd and 3rd coming into the orbit; three or four temporals; brown with dark spots, confluent to streaks on the hinder part of the body; belly brown; rostral shield grooved; vertical six-sided, not longer than broad; occipitals elongate; superciliary small; three or four temporal shields.

One specimen in the British Museum from the Madras Presidency. I have never met with it.

OLIGODON.

Body and tail moderate; head blunt, conical; rostral shield rather flat in front, pointed behind, and far produced backwards between the anterior frontals; one or two pairs of frontal shields; two nasals, nostrils between; one loreal or wanting; one anterior, two posterior, oculars; scales smooth, in fifteen to seventeen rows; sub-caudals two rowed; teeth equal; posterior maxillary teeth rather longer, not grooved; no teeth on the palatine bones; head coloration prominent.

1. *Oligodon Subgriseus* (Dum. and Bibr. p. 59.).—Belly uniform whitish without any spot.

This snake is very common on the Anamallays and Neilgherries at low elevations.

2. *Oligodon Subpunctatus* (Dum. and Bibr. p. 58.).—Belly whitish with round, irregularly disposed, black specks.

3. *Oligodon Affinis* (Günther, Annals of Nat. Hist. 1862).—Habit stout; scales in 17 rows; loreal none (united with post frontal); body brownish grey; head prominently marked; anterior part of the back with short, narrow, black, transverse streaks; belly white, with black sub-quadrangular spots, the black and white being divided into nearly equal proportions. Scutæ 134; anal bifid; scutellæ 25.

Anamallay Hills; rare. Lower forests.

4. *Oligodon Brevicauda* (Günther, Annals of Nat. Hist. 1862.).—Frontals one pair; rostral thick, broad, reaching far backwards; scales in 15 rows; loreal none; greyish violet; head with the usual markings of the genus; a broad blackish collar; a band along the vertebral line, indistinct anteriorly, light greyish on the middle of the body, becoming pure white posteriorly, and on the tail; it is bordered anteriorly by a series of pairs of equi-distant blackish spots; there are no black spots on the tail interrupting the dorsal band; a blackish longitudinal streak on each side, along the third outer series of scales; ground color of belly the same as of the upper parts with black quadrangular spots; sub-caudals whitish; tail red beneath; scutæ 172; anal bifid; scutellæ 30. Allied to Oligodon Dorsalis (Günther), a species from Bengal.

Anamallay Hills. In the lower forests. I only procured one specimen of this and the last species during the three years that I was on the Anamallays. They were described by Dr. Günther from these specimens.

Fam. II. Coronellidæ.

Body moderate, rounded, with flat belly and broad back; never of large size; tail rather short, not distinct from trunk, tapering; head rather depressed, generally with short rounded muzzle; eye moderate; shields of head regular; generally one loreal; two nasals (sometimes united); two anterior, and two or three posterior, oculars; scales moderate, smooth, not much imbricate, equal, 15 to 19 rows; ventral plates without keels; sub-caudals two rowed; *anterior teeth always shortest;* no longer tooth in the middle of the series.

1. *Simotes.*—Rostral conical, protruding, extending backwards between the anterior frontals; scales 17 to 19 rows; posterior maxillary teeth longest.

2. *Ablates.*—Rostral moderate; all equal teeth; all scales smooth.

Simotes.

Head short, conical, not distinct from the neck; rostral shield (as in Oligodon) rather flat in front, pointed behind, and far produced backwards between the anterior frontals; two nasals, nostril between; one anterior ocular, two posterior; scales smooth, 17 to 19 rows; posterior maxillary; crown of the head with regular, generally arrow-shaped marks.

1. *Simotes Octolineatus.* (Dum. and Bibr. vii. p. 634); [Russell, l. c. 11, t. 38.].—Ferruginous, with two broader dorsal, and two or three narrower lateral, black, longitudinal lines.

2. *Simotes Binotatus* (Dum. and Bibr. p. 630.).—Whitish; back with a row of pairs of black, white-edged, confluent quadrangular spots; on each side a row of smaller ones; belly white, marked with square black patches which are of the breadth of one or two of the scutæ; anal bifid; scales in 17 rows.

There are two specimens from the Madras Presidency in the British Museum.

1. *Simotes Russellii* (Dum. and Bibr. vii. p. 628); [Russell, l. c. 1, t. 35 and 38]; [Coronalla Russellii, Schlegel, Ess. ii, p. 79.].—Above ferruginous with 20—40 narrow, continuous, black, white-edged, cross bands; belly uniform whitish.

Scutæ 193; scutellæ 47; scales in 17 rows.
„ 155; „ 54

A common snake all over the Presidency.

4. *Simotes Purpurescens* (Günther, Mus. Cat.); [Xenodon Purpurescens, Schlegel, Ess. pl. 3.].—Above purple or brown,

either uniform or with lighter, black-edged, cross bands; cross bands sometimes formed of two or three confluent quadrangular spots; scales in 17 or 19 rows, and entire; scutæ 142; scutella 31.

„ 175; „ 45.

Wynaud and Anamallays; rare.

A very variable species as to coloration.

ABLATES.

Body rather elongate, slender; head moderate, rather depressed with flat crown; rostral moderate; two nasals, nostril between; one loreal; one or two anterior, two posterior, oculars; scales smooth, elongate, 13 to 19 rows; teeth equal, smooth; generally a collar.

1. *Ablates Collaris.*—(Günther, Mus. Cat.); [Prammophis Collaris, Gray, Ann. and Mag. Nat. His. 1853, p. 390.]—Scales in 19 rows; upper labials nine, 4th, 5th and 6th enter the orbit; above olive, minutely black speckled; crown of head dark brown, variegated with olive; neck with a broad, dark brown, yellow-edged collar, the yellow edges crossed by a medial dark brown streak, continued as a dorsal series of small equi-distant brown spots; beneath yellowish, each ventral shield on the sides with a black speck. Adult nearly two feet long, and about as thick as a man's middle finger.

There are several specimens in the British Museum from the Madras Presidency.

FAM. III. NATRICIDÆ.

Body moderate, rather stout, generally depressed, with flat belly, sometimes rounded; tail moderate or short, in one genus elongate, more or less distinct from trunk, tapering; head generally depressed, broad, distinct from neck, with rounded muzzle; cleft of mouth deep; eye moderate or large, *pupil round;* nostril between two nasals; number of oculars variable; scales generally with strong keels, often smooth, generally in 19 rows; ventral plates without lateral keels; *posterior maxillary teeth longest, in a few species equal, in some grooved.*

Fresh water or in moist places.

1. *Xenodon.*—Anterior frontals broad, rounded in front; posterior maxillary tooth longest and separated by an interspace.

2. *Tropidonotus.*—Anterior frontals narrow, pointed in front; posterior maxillary tooth longest, generally in a continuous row with the others.

Xenodon.

Body stout; belly flat; head short, broad, flat, crown with broad, short shields; tail stout, tapering; eye large; two pairs of frontals; one loreal; one or two anterior, two or three posterior, oculars; two nasals, nostril between; rostral moderate, reaching the surface of the head; scales generally much imbricate and in very oblique rows, keeled; posterior maxillary tooth not grooved.

1. *Xenodon Viridis* (Dum. and Bibr. vii. 763); [Tropidonotus Plumbicolor, Cantor].—Scales keeled, 25 rows; adult uniform green; young blueish green with a broad, white, black-edged collar pointed in front; the anterior black edge very broad, the posterior narrow; on the sides of the body some black, narrow, transverse streaks; the belly is more uniform black the younger the specimen.

This snake has the power of extending its neck into a sort of hood similar to the cobra, the young is very different in appearance to the adult.

This snake is very common in the Anamallay forests and other hills on the Western Coast, I also found it at Cuttack.

Tropidonotus.

Body moderate, rather stout; belly rounded; tail moderate, not distinct from trunk, tapering; head moderate with flat crown, rather distinct from neck; snout pointed, rounded; eyes moderate, pupil round; nostrils near the tip of the muzzle, small between two shields; cleft of mouth deep, curved; shields of head regular: two small anterior frontals, acute-angled in front and forming together an isosceles triangle; one loreal; occipital plates often with a pair of yellow spots, and divided; scales keeled, rhombic or lanceolate, moderate, generally in 19 rows, sometimes in more; teeth smooth, equal, except the posterior in the upper jaw, which is longest.

1. *Tropidonotus Quincunciatus* (Dum. and Bibr. vii, p. 592); [Russell l. c. 11, t. 14, 15a, 20, 33]; [Tropidonotus Piscator.].—Scales 19 or 21 rows; two anterior nasals; one anterior, three posterior, oculars; nine upper labials, 4th and 5th touching the eye; two narrow, black, oblique streaks extending from the eye across the hinder upper labial shields; above olive gray with three, five, or seven, series of

square or rounded blackish-ash blotches; beneath yellowish. The coloration is very variable in this species. Scutæ 134; sub-caudals 72.

Very common in tanks all over the Presidency.

2. *Tropidonotus Stolatus* (Schlegel, Ess. 11, p. 317); [Russell l. c. 1, t. 10, II 19.].—Scales in 19 rows; upper labials eight (seven), the 3rd, 4th and 5th touching the eye; above olive brown, with two yellow or light bands and a series of black cross-bars between; black streak under the eye along the meeting margins of the 4th and 5th upper labial shields; abdomen white; each plate on the sides black spotted; scutæ 146; sub-caudals 61.

One of the commonest snakes in our Presidency.

3. *Tropidonotus Monticola* (Jerdon, Cat. of Rep.).—Blueish brown, with transverse black blotches, with white marks between; white marks on the occipitals; belly white; scales 17—19 rows, lowest ones rhombic; three posterior, one anterior, oculars; rostral emarginate; eye very large; nostril between two nasals; loreal one, small; upper labials eight, 3rd, 4th and 5th enter the orbit; both pair of frontals small; vertical, broad in front; occipitals large; temporals small; middle labial small with two small accessory labials; lower marginal labials eight; a white line across the head between the vertical and occipitals; posterior and anterior oculars and the labials touching the eye, white; scales all keeled, except lowest row; ventrals smooth.

Anamallays, Wynaud. Up to 3 feet and more in length.

Fam. IV. Colubridæ.

Body moderate, sometimes elongate, sometimes slender; tail generally of moderate length, not distinct from trunk, tapering; head moderate with flat crown, rather distinct from the neck, quadrangular, with moderate, rounded, sometimes pointed, muzzle; shields of head exceptionally irregular; cleft of mouth deep; nostrils lateral; eye moderate, sometimes large with *round pupil;* loreal shield never wanting; nostril between two nasals; scales ovoid, of nearly equal size, on the back moderately imbricate; sub-caudals two rowed; *teeth never grooved, generally of equal length in Conyphodon; maxillary teeth becoming longer behind gradually.*

1. *Cynophis.*—Muzzle much elongate; body and tail com-

pressed; one anterior, two posterior, oculars; scales keeled; pterygo-palatine teeth bent inwards.

2. *Coryphodon.*—Maxillary teeth gradually longer behind.

Cynophis.

Body slender, compressed; head narrow with much elongate muzzle; shields of crown regular; upper labials nine or ten; loreal one; one anterior, two posterior, oculars; nostrils between two shields; eye moderate; scales small, rhomboid in 21 to 27 rows; those of the back slightly keeled, and entire; teeth numerous, equal, smooth; pterygo-palatine teeth bent inwards.

1. *Cynophis Helena* (Günther, Museum Cat.); [Russell, Med. Serp. 1. t. 32]; [Herpetodryas Helena, Schlegel, Ess. 11, p. 192.].—Scales in 27 rows; upper labials nine, the 5th and 6th coming into the orbit; sometimes the 4th divided into two, the eye then being over the suture of the 6th and 7th; on the side of the anterior part of the body a series of large black spots (sometimes with a white centre) continued from the middle of trunk to tip of tail as a broad brown longitudinal band; adult two feet long and twice the thickness of a man's finger; scutæ 230; sub-caudals 90.

Rather common. I procured several specimens in the Anamallays, Pulney, and Coimbatore Hills.

1. *Cynophis Malabaricus* [Herpetodryas Malabaricus, Jerdon, Cat. of Rep. Calcutta Journ.].—Scales in 25 rows; scutæ 222; scutellæ 91; olive brown with a dark streak along the sides, most conspicuous on the posterior portion of the body, edged with black.

Anamallays; common. Malabar.

This beautiful species I have never procured of greater circumference than a man's finger. The only specimens in the British Museum are those of my collecting.

Coryphodon.

Body and tail generally elongate and compressed, sometimes very slender, sometimes moderate; head with flat crown, rounded muzzle, and moderate rostral shield; eye large; loreal entire or divided; anterior oculars one or two, posterior two or three; scales elongate, rhomboid, in 14 to 23 rows; maxillary teeth gradually larger and longer behind, smooth.

1. *Coryphodon Fasciolatus* (Günther, Mus. Cat); [Russell, l. c. 1. t. 21]; [Coluber Fasciolatus, Shaw.].—Scale

smooth in 23 rows; two anterior, two posterior, oculars; rostral rather protruding; yellowish olive with equidistant, narrow, white and brown variegated cross bands, more conspicuous on the anterior part of the body; beneath uniform yellowish. The young has transverse bars of small white spots, each edged with black; some spots on the centre shield of the head.

Not uncommon. I procured it in the Anamallays.

2. *Coryphodon Blumenbachii* (Dum. and Bibr. vii., p. 184.); [Russell, l. c. 1, t. 34. 11. t. 18. f. 2, young]; [Coluber Blumenbachii, Schlegel, Ess. pl. 5.].—Olive scales of the hinder part of the body, and of tail with black edges, forming sometimes more or less regular, narrow, transverse streaks; scales of the back keeled in 17 rows; called by the natives Dhamin. It is one of the commonest snakes in India.

Scutæ 186 +	sub-caudals 117
200 +	125
192 +	104

Fam. V. Dendrophidæ.

Body very slender and elongate, pentagonal; head generally elongate, narrow, flat, depressed, distinct from the exceedingly slender neck; snout protruding, rounded or obtuse in front; upper jaw rather longer than lower; rostral broad, depressed; mouth deeply cleft; nostril lateral, small; eye moderate or large, pupil round; anterior ocular one, posterior two to three; shields of head regular, elongate; scales very narrow, in fifteen or twenty-one rows; *ventral plates generally with two keels and rising on the sides;* sub-caudals two rowed.

1. *Chrysopelea.*—Ventral plates very strongly keeled.

2. *Dendrophis.*—Ventral plates slightly keeled; a vertebral series of larger polygonal scales.

Chrysopelea.

Body and tail very elongate and slender; head depressed; snout rather obtuse; nostril between two shields; pupil round; upper labials narrow; scales not much elongated, rhombic; ventral plates appearing to be formed out of three pieces, one medial and two laterals, the latter raised on the sides, erect; sub-caudal plates two rowed; posterior maxillary teeth longer and furrowed, anterior nearly equal in length.

1. *Chrysopelea Ornata* (Dum. and Bibr. vii., p. 1042); [Russell I, t. 2]; [Coluber Ornatus, Shaw]; [Dendrophis Ornatus, Schlegel.].—Scales smooth in 17 rows, black; crown with some yellow cross bands; body regularly ornamented with small yellow spots; sometimes each scale is yellow with a black streak along its centre, or with a yellow spot in its centre, and sometimes there are red spots between the cross bands. Scutæ 200; sub-caudals 113.

A very beautiful species—very common in the hilly forests on the western side of our Peninsula. I have had dozens brought to me in the Anamallays.

Dendrophis.

Scales smooth; those of the vertebral line much larger, triangular and polygonal; those of the outer rows much elongated, narrow, quadrilateral, very imbricated; maxillary teeth equal in length, smooth; sides of abdomen slightly keeled.

1. *Dendrophis Picta* (Schlegel, Ess. t. 9. f. 5—7); [Coluber Pictus, Gruelin]; [Ahœtulla Bellii, Gray, Ill. Ind. Zool.]; [Russell, t. 25—26].—Blueish green with a lateral yellow, above and beneath, black-edged band; scales in 15 rows; scutæ 175; sub-caudals 128.

Var. A. The black lines hardly conspicuous and disappearing towards the tail. The anterior scales of the vertebral row yellow.

Very common.

Fam. VI. Dryiophidæ.

Body generally excessively slender and elongate; head very narrow and long with a thinly pointed snout, sometimes ending in a flexible appendage; upper jaw much longer than lower; rostral shield always protruding, sometimes peculiarly modified; mouth deeply cleft; nostril lateral, small; eye rather small with an ovoid, or linear, horizontal pupil; one anterior, one—two posterior, oculars; shields of crown regular, elongate; scales very narrow, imbricate, scarce, in 15 to 17 rows; vertebral row generally broader; triangular ventral plates without, or with, obsolete keels; sub-caudals two rowed; *maxillary teeth sometimes unequal, the 4th, 5th and 6th longer; the hinder one always longest and grooved.*

1. *Dryiophis.*—Muzzle pointed; rostral solid.
2. *Passerita.*—Muzzle ending in a flexible appendage.

Dryiophis.

Head much elongate, pointed in front, but the front part solid, not moveable.

1. *Dryiophis Prasina* (Reinwardt); [Dryinus Nasutus, Bell. Zool. Journ. 11, p. 327]; [Septophis? Nilagiricus? Jerdon].—Scales smooth; rostral shield above with a rather sharp convex ridge, not produced backwards; 4th, 5th and 6th upper labials reaching the orbit; one to three loreal shields; above green; on the sides a well defined yellow or white longitudinal stripe; scutæ 200; sub-caudals 160.

Var. B. *Xanthozonia.*—Reddish color—[Russell l. c. 11, pl. 24]; [Tragops Xanthozonius, Dum. and Bibr. vii. 826]—Both varieties are common on the Anamallays and Neilgherries, on grassy plains above 4,000 feet.

2. *Dryiophis Tropidococcyx* (Günther, Mus. Cat. p. 157).—Scales 15 rows; body and tail rather stout; muzzle not much elongated; scales smooth, only those on the coccygeal region strongly keeled, those on the vertebral line not larger; upper labials eight; loreal none; rostral far produced backwards; brownish green to green, a whitish line at the edges of abdomen.

About one-fifth of the anterior maxillary teeth are longer and larger than the rest; anterior frontals small and bent to the sides, replacing a posterior nasal shield and touching the second upper labial; posterior frontals large, rounded behind, and bent on the side, replacing a loreal shield and touching the same labial; anterior ocular single, large, touching the vertebral, deeply grooved before the eye, and with the superciliary far projecting over the side of the head; one posterior ocular; one single nasal; four to five temporal shields. [Leptophis? Canarensis? Jerdon Cat.]

Common, on the hilly regions of the western side of our Presidency.

Passerita.

Body and tail very thin and long; sides of abdomen rounded; head much elongate; snout with a moveable acute appendage, shorter than one-third of the head; pupil linear, horizontal; teeth in the upper jaw of unequal length, some in the middle longer; posterior teeth furrowed; scales smooth, those of the sides linear, adpressed, those of the vertebral series a little larger, triangular.

1. *Passerita Mycterizans* [Gray, Ann. Phil. x. p. 208); [Russell, l. c. t. 12—13]; [Dryinus Nasutus, Merr.].—Color

green above, beneath paler; on the sides a well defined yellow or white, longitudinal stripe; scutæ 180; scutellæ 153.

One of the commonest snakes in our Presidency.

A. Var. Fuscus, greyish brown, marbled with purple; no longitudinal stripe. Rare.

Dipsadidæ.

Body much compressed, much elongate or moderate; tail tapering, slender or short; *head short, generally very broad behind, triangular*, very distinct from the neck, sometimes high, quadrangular or rounded; eye large, sometimes very large, pupil generally elliptical; shields of crown truncated; loreal sometimes wanting; never more than two anterior and three posterior oculars; nostril lateral; scales elongate, generally smooth, and those of the vertebral line larger; scutellæ in some species entire; *generally posterior maxillary teeth grooved; in a few species longer anterior maxillary teeth and grooved posterior ones; in a few all equal, and in some longer, anterior palatine teeth; never longer anterior teeth in the upper jaw without grooved ones behind.*

1. *Eudipsas.*—Head triangular, depressed; scales of the vertebral line larger; anterior palatine and maxillary teeth longer than the former.

2. *Dipsas.*—Head triangular, depressed; scales moderately imbricate, those of the vertebral line larger; sub-caudals two rowed; no longer anterior teeth.

3. *Dipsadomorphus.*—Scales not much imbricate.

Eudipsas.

Body and tail elongate, compressed; head broad, distinct from the neck; head shields regular; one loreal; one anterior, two posterior, oculars; scales moderate, 19 to 23 rows, those of the vertebral line larger, hexagonal; anal entire; sub-caudals two rowed; pupil sub-elliptical; eye moderate; nostril between two nasals; anterior palatine, maxillary and mandibulary teeth longer, or much longer, than the following; posterior maxillary tooth furrowed.

1. *Eudipsas Cynodon* (Seba, ii. 76, 1.); [Dipsas Cynodon Cuv.].—Anterior palatine and mandibulary teeth very large, much longer than the others; scales in 21 to 23 rows; greyish with dark brown or black cross bands; crown varied with brown; a dark streak from the back edge of

the eye to the angle of the mouth; scutæ 260; sub-caudals 140.

Western Ghauts; rare.

Dipsas.

Body and tail generally compressed, elongate; head much depressed, triangular, broad behind, very distinct from neck; generally one loreal; one anterior, generally two posterior, oculars; rostral moderate; scales moderate, 19 to 27 rows, smooth, moderately imbricate, in not very oblique rows; those of the vertebral series larger; anal entire; sub-caudals two rowed; pupil elliptical; nostril moderate, between two shields; posterior maxillary teeth longest, grooved.

1. *Dipsas Forsteni* (Günther, Mus. Cat.); [Triglyphodon Forsteni, Dum. and Bibr. vii., 1077.].—Scales in 27 to 29 rows; anal entire; olive with darker cross bands or only varied with black.

I procured one specimen of this very fine species in the Anamallay forests.

2. *Dipsas Dendrophila* (Seba, l. 21, 1); [Triglyphodon Gemmicinctum, Dum. and Bibr. vii. p. 1091.].—Scales in 21 rows; anal entire; black with 40 to 60 narrow, yellow or white, cross bands; scutæ 220; scutellæ 102.

This snake was not uncommon at Cuttack, it is very like the young of Hamadryas Elaps in color.

Dipsadomorphus.

Body and tail compressed, elongate; head depressed, triangular, broad behind, very distinct from the neck; one loreal; one anterior, two posterior, oculars; rostral moderate; scales moderate, nineteen to twenty-three rows, smooth, very much imbricate in very oblique rows, those of the vertebral row larger; anal entire; sub-caudals two rowed; pupil elliptical; nostril moderate, between two shields; posterior maxillary tooth longest, grooved.

Dipsadomorphus Trigonatus.—(Fitzinger, Syst. Rept., p. 27.); [Russell, l. c. i. t. 15]; [Dipsas Trigonata, Boie. Isis. 1827, p. 559.]—Scales, 19 or 21 rows; one loreal; light yellowish brown with a yellow black-edged, sometimes interrupted, dorsal, zigzag band, the black edges sometimes extending to the abdomen; belly uniform yellowish, with an irregularly punctated lateral line. A very common snake.

Scutæ	233;	sub-caudals +	80.
,,	266	,,	105.
,,	247	,,	95.

LYCODONTIDÆ.

Body generally moderate, rounded or slightly compressed, in one genus very elongate and slender; tail moderate, rounded, tapering; head oblong with flat crown and generally with depressed, broad, rounded muzzle; eye rather small, *pupil elliptical*, erect; shields of crown regular, generally posterior; frontals very large; lateral shields of head sometimes complete, sometimes irregular; one or two nasals; one or no loreal; not more than two anterior and two posterior oculars; scales rhomboid or ovoid, sometimes those of the vertebral line larger; anal generally entire; sub-caudals bifid or entire; *anterior teeth of both jaws longest* (except in Odontomus); no grooved tooth in front or behind.

1. *Lycodon.*—Two nasals, nostril between; one loreal; one (or two) anterior, two posterior, oculars; scales smooth, (vertebral line generally not larger), in seventeen rows.

2. *Leptorhytaon.*—Body round; one nasal; vertical three sided.

3. *Odontomus.*—Body compressed; one nasal; anterior palatine teeth longest, those of the jaw not elongate, anterior ones of upper jaw compressed; scales 13—15 rows.

4. *Ophites.*—Scales keeled; those of back equal; sub-caudals bifid.

LYCODON.

Body rather elongate, rounded or slightly compressed; tail moderate; head depressed with flat crown and broad, rather obtuse, muzzle; pupil elliptical, erect; shields of head regular; two nasals, nostril between; one loreal; one or two anterior, two posterior, oculars; scales smooth, moderate, not much imbricate, in seventeen rows; those of the back equal or not much larger; anal entire; sub-caudals two rowed.

1. *Lycodon Anlicus.*—(Dum. and Bibr., p. 369).—Rostral just reaching the surface of head; one loreal; one anterior ocular.

Color brown to blackish, with brown blotches, more or less confluent, sometimes separated by lighter cross bands, entirely or partially; sometimes lineolated or punctulated with the ground color, sometimes uniform.

The coloration is very variable. (Lycodon Capucinus, Boie, and Lycodon Hebe, Wagl. Syst. p. 186, are both varieties of this species). The commonest snake in the Madras Presidency, often found in houses.

LEPTORHYTAON.

Body moderate, rounded; tail short; head depressed, pointed in front; pupil elliptical, erect; rostral shield obliquely protruding, rather pointed above, just reaching the surface of the head; anterior frontals rather larger, posterior smaller; vertical three-sided; one nasal shield pierced by nostril; one very large elongate loreal, pointed behind and coming into the orbit; one anterior ocular situated above the loreal, two posterior ones; scales smooth, rather elongate, rhomboid, in seventeen rows, those of the back equal; anal bifid; sub-caudals two rowed.

1. *Leptorhytaon Jara*.—(Günther); [Jara Potoo, Russell, l. c. 1 t. 14]; [Coluber Jara, Shaw, Zool. iii. p. 525]; [Coluber Linnæi, Merr.]; [Lycodon Jara, Schleg. Ess. 11, p. 110].—Scutæ 175; scutellæ 56; each scale brown with two whitish spots, separated by a brown longitudinal streak along the centre; a whitish color, more conspicuous in the young; beneath uniform whitish.

Rare. I procured it in the Anamallays and at Cuttack.

ODONTOMUS.

Body very slender and compressed; belly angularly bent on the sides; tail elongate; head short, depressed; eyes large, pupil erect; shields of crown regular; posterior frontals smaller than in other Lycodontidæ; vertical elongate; one nasal, one long, narrow loreal coming into the orbit; one anterior ocular situated above the loreal; two posterior oculars; scales smooth, rhomboid, rather short, in thirteen to fifteen rows, those of the back equal; sub-caudals two rowed; anterior palatine teeth longest, those of the jaws not elongate, anterior ones of the upper jaw compressed.

1. *Odontomus Nympha* (Dum. and Bibr. p. 450); [Russell, l. c. 11, t. 36—37]; [Lycodon Nympha, Boie].—Scales in 13 rows; light brown with a dorsal series of large round spots; scutæ 220—234; scutellæ 85—87.

Not rare at Madras.

OPHITES.

Lycodon with keeled scales in 17 rows; sub-caudals two rowed; two nasal shields; either one long loreal replacing an ante-ocular, or one small loreal and one ante-ocular; two posterior oculars; habit rather elongate.

1. *Ophites Subcinctus* (Dum. and Bibr. vii. p. 399); [Coluber Platurinus, Shaw, Zool. iii. p. 468]; [Lycodon Pla-

tyrhinus, Cantor, Cat. of Mal. Rep.].—Scales of the hinder part of body slightly keeled; one large loreal; no ante-ocular shield; brownish with broad whitish rings round the trunk and tail, those of the tail disappearing with age.

Rare.

2. *Ophites Albofuscus* (Dum. and Bibr. vii. 394).—All scales keeled; one short loreal; one ante-ocular; beneath uniform whitish; trunk and tail with alternate brown and white cross bands.

(Much like some varieties of Lycodon anlicus in coloration.)

Malabar.

B. Venemous snakes with grooved fangs in front.

Elapsidæ.

Head generally quadrangular with flat crown and moderate or short muzzle; loreal none; generally one, sometimes two anterior, two or three (rarely four) posterior, oculars; scales smooth, rather round or ovoid, sometimes those of the vertebral line larger; sub-caudals entire or two rowed; grooved fangs, immoveable, sometimes without other smaller smooth ones behind.

1. *Hamadryas.*—One or two smooth teeth behind the fang; three pairs of very large shields round the occipital shields.

2. *Bungarus.*—Scales of the vertebral line hexagonal; sub-caudals entire.

3. *Naja.*—One or two smooth teeth behind the fang; scales of the back equal; rostral shield moderate.

4. *Callophis.*—No smooth tooth behind the fang; scales in 13 rows; anal entire.

Hamadryas.

Body elongate and rather rounded; tail moderate, not distinct from trunk; head not distinct from neck, moderate, quadrangular, with moderate rounded muzzle; occipital shields large, surrounded by three pairs of very large shields; two nasals, nostril between; no loreal; one (rarely two) anterior, three posterior, oculars; scales smooth, much imbricate, in 15 rows; those of the vertebral line larger, sub-hexagonal; anal entire; first sub-caudals entire, hinder ones two rowed (exceptionally all bifid); grooved fang in front; some smaller ones not grooved behind.

1. *Hamadryas Elaps* (Günther, Mus. Cat.).

Var. B. Vittata.—Brownish olive with narrow white cross bands; head with four broader cross bands—(the young exactly resembles in color "Dipsas Dendrophila").

This snake has the power of expanding its neck into a hood the same as the common cobra. It is very common at Cuttack and commonly brought round by the snake charmers there. I killed one nearly 14 feet long. I have also procured it in the Anamallay forests; but it is rare there.

BUNGARUS.

Body rather elongate and compressed; tail short; head depressed, broad, distinct from the neck, with short rounded muzzle; two nasals, nostril between; no loreal; one anterior, three posterior, oculars; scales smooth, not much imbricate, in 13 to 15 rows; those of the vertebral line larger and hexagonal; anal and sub-caudals entire; grooved fang in front; some smaller ones behind, not grooved.

1. *Bungarus Lineatus* (Günther, Mus. Cat.); [Russell, l. c. i. l. ii. 31 ?]; [Bungarus Candidus, Cantor].—Brownish with a strong cast of purple; back sometimes with small longitudinal and transverse white streaks, sometimes with white cross bands.

Var. A. Back with small longitudinal and transverse streaks.

Common all over the Presidency.

Var. B. (Arcuatus); (Dum. and Bibr. p. 1272).—Pairs of narrow white cross bands on the back.

I procured this handsome variety of this species in the Anamallay forests; it is rare.

Var. C. Color uniform, without bands or streaks.

2. *Bungarus Fasciatus* (Cantor, Cat. p. 113); [Russell l. pl. 3]; [Bungarus Annularis, Dand. Rept. v. 265.].—Body encircled with large black rings.

Var. A. On each side of neck a large white spot, emitting a white streak on the crown, both streaks confluent on the crown and forming an arrow-shaped mark.

I have procured this in the Anamallay forests and at Cuttack.

3. *Bungarus Semifasciatus* (Schlegel, Ess. pl. 16, f. 18—20); [Coluber Candidus, Linn].—Back with large, dark brown cross bands; belly uniform whitish.

Naja.

Body and tail moderate; belly flat; head high, quadrangular, not very distinct from the neck, with rather short rounded muzzle; rostral moderate, rounded, sometimes produced backwards and pointed; frontals moderate, nearly equal; vertical moderate; loreal replaced by anterior ocular, 3rd labial and posterior nasal; two nasals, nostril between; one anterior, three (rarely two—four) posterior oculars; 3rd labial forming the lower half of front edge of orbit; scales smooth, much imbricate; number of dorsal longitudinal rows variable; anterior ribs longer; anal entire; sub-caudals two rowed, grooved; fang in front; one or two smaller ones, not grooved, behind.

Naja Tripudians (Dum. and Bibr. p. 1293); [Coluber Naja, L. Mus. ad Fried.].—The Cobra; scutæ 187—190; scutellæ 47—60.

Sixth upper labial small, forming a suture with a very large temporal; generally with a spectacle's mark on the neck.

Color very variable, from a pale whitish brown to nearly jet black, with or without irregular cross bands.

I have never found it above 4,500 feet elevation.

Callophis.

Elapidæ with very slender and cylindrical body, with short tail, and depressed head, not distinct from neck; no tooth behind the fang; 13 rows of scales; anal entire; two nasals, nostril between; six, rarely seven, upper labials; one anterior, two posterior, oculars; colors of the upper parts arranged in longitudinal streaks.

Callophis Trimaculatus (Dand.); (Russell, Ind. Serp. 1, p. 28); [Elaps Trimaculatus, (Merr. Tent. p. 143)]; [Coluber Melanurus, (Shaw), not of Cantor.].—Belly uniform without any spots; body above olive, uniform or with narrow lateral fillets; head above occiput and neck black with some yellowish spots, symmetrically arranged; tail beneath chequered with black; vertical shield six-sided, rather broad and short; six upper labials.

I procured this little snake in the Anamallays. Dr. Russell's typical specimen is the only one in the British Museum.

Callophis Malabaricus.—[Elaps Malabaricus, Jerd. Cat.].—Head black with transverse bands; brown above with black

markings, bright red beneath; scutæ 246; scutellæ 38; scales in 13 rows; tail exceeds $\frac{1}{11}$ of total length.

Malabar. *I have never found this snake.*

Fam. Typhlopsidæ.—(Earth Snakes.)

Head depressed, broad, rounded in front with a large, oblong, erect, rostral plate; nostrils lateral in a distinct nasal shield behind the edge of the muzzle, and with a slit to the hinder lower, and sometimes to the front upper, edge of the plate; mouth small, lunate inferior, above edged by the shields on the side of the head; upper labial shields none; crown covered with three series of six-sided scale-like shields, the middle ones representing the internasal, frontal, and interparietal shields; eyes lateral, covered by and only to be seen through the ocular shields, sometimes wanting; tongue elongate, flat, forked at the tip; body cylindrical, sometimes rather larger behind; scales six sided, smooth; tail cylindrical, suddenly contracted and obliquely convex and scaly above, at the end tip covered with a conical or spinose shield.

They are sometimes found 3 or 4 feet under ground, and also under stones; they move swiftly.

Typhlops.

Head depressed, almost entirely covered with a very large, oblong, nail-like rostral, which is horny, sharp-edged, keeled, and rather bent down in front; nasal, fronto-nasal, and eye shields very narrow; the rest of the head covered with scales like the body; scales all small and uniform; tail very short, tapering suddenly, convex above, apex incurved.

Typhlops Russellii (Gray, Mus. Cat.).—Yellowish white; rostal rather darker; tail much shorter than broad, apex incurved.

Argyrophis.

Rostral oblong, erect, regularly arched in front and slightly convex above and below, narrow below; nostrils inferior with a slit extending to the upper, as well as to the lower edge, of the nasal; nasal, fronto-nasal, and eye shields flat, oblong, subangular, well developed; eyes distinct; crown with three series of six-sided shields; body sub-cylindrical; scales smooth, equal sized; pre-anal scales many, like

the others; tail very short, suddenly tapering, convex above, tip acute, conical, incurved.

* Upper nasal slit, sinuous, and extending quite to the margin of the nasal.

1. *Argyrophis Bramicus* (Gray, Mus. Cat.); [Eryx Bramicus, Dand.]; [Russell, t. 43.].—Black or greyish black; rather pale beneath; head regularly rounded and pale in front; rostral and nasal shields with a pale crenulated submarginal edge; rostral oblong, scarcely one-fourth the width of the head, rounded above, contracted beneath; the crown shields equal, rather broad, rounded behind, the 4th shield rather wider, the 5th longer, than the other three.

Common. Generally found under stones.

Fam. Uropeltidæ.—(Rough Tails.)

Head conical, compressed, shelving and acute in front, flat above behind; crown covered with regular shields; rostral produced, moderate, convex, horny, subtriangular, erect, produced and acute behind; nostrils roundish; lateral simple in the middle of the front of an erect, subtriangular band-like nasal; internasal none; fronto-nasal subtriangular, truncated below, contiguous above; frontal and fronto-parietal distinct; nape scaly; labial shields $\frac{4}{4}$, distinct; eyes distinct, lateral, in the middle of the front of an erect eye shield, and covered by the shield without any eyelids; eyebrow shields none; tongue elongate, flat, forked at the tip; body cylindrical; scales six-sided, smooth, those of the hinder part and above the tail sometimes 2—4 keeled; vent with three scales in front; tail cylindrical, obliquely truncated above.

This family is intermediate between snakes and lizards; they live under ground like the Typhlopsidæ.

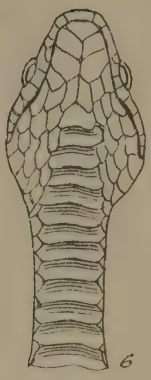
* Tail obliquely truncated with a flat superior disk.

1. *Silybura.*—Disk oblong, covered with separate, 2—4 keeled scales.

2. *Uropeltis.*—Disk circular, covered with a single tubercular plate.

** Tail sub-truncate; end convex, rounded, covered with a single, horny, tubercular shield.

b.



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1. *Silybura Ellioti.*

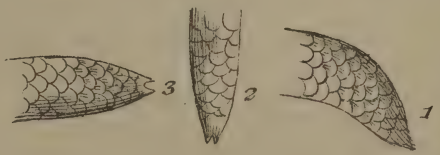
2. *Rhinophis melanogaster.*

3. *Plectrurus Perrotetti.*

4. *Rhinophis melanogaster.*

5. ..... *d°* ..... *d°* .....

6. *Trimesurus macrolepis.*



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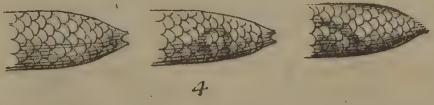

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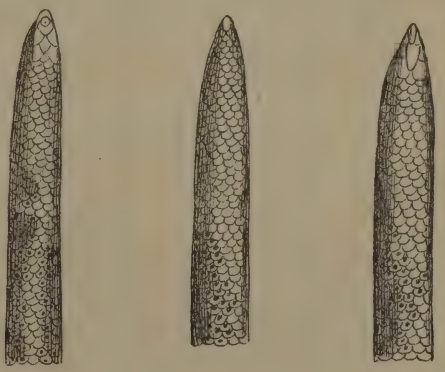

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3. *Rhinophis.*—Caudal shield many keeled; nose more or less acute.

*** Tail oblong, compressed, covered with separate three keeled scales; tip covered with a small, compressed, cap-like, spinose shield.

4. *Plectrurus.*

SILYBURA.

1. *Silybura Ellioti* (Gray, Proceedings of Zool. Soc. No. 363, p. 262); [Silybura Ceylonica, Gray, Cat. Brit. Mus. 142; (not Cuvier.)].—Caudal disk oblong, elongate; *scales of the disk four keeled;* brown with a narrow yellow streak on each side of the neck; a broad yellow band in front of the vent, continued in a band on each side of the tail; scales in 17 rows, on the neck 19; ventrals 168; sub-caudals 11.

Var.—Larger scales of the caudal disk 3—4 keeled.

Neilgherries.—Vide fig. No. 1.

2. *Silybura Brevis.*—(Günther, Annals and Mag. of Nat. His. 1862. January and February.)—Scales in 17 rows, on the neck in 19; ventral shields 122; anal bifid; sub-caudals 9; snout obtuse; rostral shield rounded; caudal disk well defined, nearly as long as the tail; each scale with two strong keels; the disk terminates in two horny, horizontal points; body short, the circumference of the anterior third of the trunk being contained six times and a half in the total length; upper parts brown; the lower part of the sides and belly yellowish, densely marbled with brown; sides of the throat yellowish immaculate; the lower part of the tail black, with a broad white band on each side; total length 66 lines; length of the head 3 lines, of the tail $3\frac{1}{2}$ lines; anterior part of trunk 10 lines in circumference.

Anamallay Hills; rare.

The only specimen that I ever procured of this, I found in the teak forests; it is now in the British Museum. Its head is much more clearly defined than the other snakes of this family.

3. *Silybura Beddomii.*—(Günther, l. c.)—Scales in 17 rows; on the neck 19; ventrals 178; anal bifid; sub-caudals 5—6; snout pointed; rostral shield conically protruding, its posterior portion compressed into a slight ridge far produced backwards, but separated from the frontal shields by the nasals; caudal disk slightly convex, not well defined, nearly

as long as the tail, with 2—3 strong keels on each scale; the disk terminates in a broad, horny, bicuspid, horizontal scale; body elongate, the circumference of the thickest part of the anterior third of the trunk being $\frac{1}{11}$th of the total length; brown; each ventral shield and each scale on the sides with a white dot; a yellowish line on each side of the neck, commencing from the last upper labial; vent and tip of tail yellow; length 132 lines; head 3 lines; tail 4 lines; circumference $11\frac{1}{2}$ lines.

Anamallay Hills and Neilgherries; common on the higher elevations.

The only specimens in the British Museum are those that I took to England.

Uropeltis.

Tail obliquely truncated; disk roundish, covered with a single, flat, roundish, granulated shield; nasal scutellæ joined behind the rostral.

(No snake of this genus has yet been found in our Peninsula, but it probably occurs on our Western Ghauts, as it is found on the Ceylon Hills.)

Rhinophis.

Caudal disk convex, covered with a single convex shield, covered with small spine-like ridges; rostral scales produced, more or less acute; nasal scutellæ distinct; caudal shield with slight perpendicular keel, or with a terminal transverse dentated keel, or without any terminal keel.

1. *Rhinophis Melanogaster.*—(Peters De Serpentum, Familia Uropeltaceorum, p. 18.); [Plectrurus Ceylonicus, Peters. Monatsberichte der K. Akad der Wissenschaften zu Berlin 1859—p. 388.]; [Mytilia Melanogaster, Gray, Proc. Zool. Soc. 26, p. 264.].—Scales of the body 17 rows; of neck 19; infra-labials 2, 3, 4; ventrals—female 166, male 154; sub-caudals—female 5 or 6, male, 9—10; caudal shield small, with a terminal transverse, dentated keel; rostral square, rather acute; above violet, brownish with indistinct pale lines, between the series of scales, formed by very small pale dots on the outer sides of the scales; sides white from lips to vent; belly black, white spotted; tail above and below like the back, dark with indistinct pale lines; caudal shield tridentate at the tip. Vide figs. No. 2, 4, and 5. a. b. c.

Anamallays; higher elevations.

Plectrurus.

Tail oblong, compressed, covered with separate three keeled scales, or rarely nearly smooth; apex furnished with a small, compressed, cap-shaped shield covered with small spines and ending in a central, perpendicular, spinose keel; nose rounded, rather produced; the central ventral series of scales rather broader than the other scales, six-sided.

1. *Plectrurus Perrotteti.*—(Gray, l. c. page 265.)—Brownish, paler beneath, with a more or less large or distinct oblong, transverse, yellow spot in front of the vent. Vide fig. No. 2. tail.

Var. 1. With series of obscure, small, pale spots between each series of dorsal scales.

Var. 2. Tail with a central line of white spots on the upper side, and with a row of white spots on each side near the vent, converging and united in the middle of the end of the tail; hinder part of upper lip white.

Anamallay Hills.—Neilgherries.

Art. II.—*Indian Substitutes for European Medicines.*

By George Bidie, M. B. Mysore Farm, Hoonsoor.

Part I.

Considering the many years that we, as a nation, have been in India and its great natural resources, it is not right that we should now be so dependant on England for our supplies of medicines. With all the refinement and latitude of our medical education, it is to be feared that in many respects it is not practical. It is not long since the older practitioners in England drew many of their remedies from the neighbouring meadow or hedgerow, making their own extracts, ointments and tinctures; preparations for which the modern physician is entirely dependant on his neighbour the druggist. Such an arrangement may be advisable in England, but the total neglect, by the Colonial practitioner, of the pharmaceutical craft is neither convenient nor economical. What if an accident, such as an European war, were to cut off our annual supplies of English drugs? Are we all prepared to carry on the business of the dispensary as usual, independent of the deprivation; and are our subordinates, the natives of the country, whom we have

educated, ready for such a contingency? Doubtless many of us possess a creditable knowledge of indigenous medicines, but is our present mode of procedure, ignoring as it were their value and even existence, likely to enable us as a profession to take advantage of them on a day's or a week's notice. The necessary knowledge is not intuitive, nor the skill to be got without practice. To gain these we must lay aside our exclusive pride in the English Pharmacopœia, and use the Indian *Materia Medica* with patience and in a humble spirit of inquiry. Let us not despise a medicine because its use is peculiar to India, or fling aside a truth because it is mixed up with many crude notions. Great men have led the way, for the illustrious names of Ainslie, Roxburgh and Wight shed honour on the Medical Service of Madras. To Ainslie we are particularly indebted for a knowledge of Indian medicines. For more than 20 years he laboured collecting materials for his "Materia Indica," a work that, for extent of research and accuracy, is without a parallel in the English language. Royle and O'Shaughnessy also trode the same path with distinction, and there are now amongst us men on whom the mantles of Ainslie and Royle have fallen, who are not unworthy of such honours.

But besides her indigenous drugs India is capable of producing many valuable remedies, natives of other countries. Indeed at present Madras is independent of England for supplies of Hyoscyamus, Taraxacum, Digitalis and Belladonna, and there is no reason why we should not cultivate many other medicinal plants. Jalap, Ipecacuanha, Conium, &c., have been introduced and found to grow remarkably well; but their cultivation has never, strange to say, extended beyond an experiment. There are also in India many indigenous plants, producing medicines, which are imported at present from other countries; such as the Cissampelos Pareira* and Cucumis colocynthis. This is not creditable to us, for as the representatives of Medical Science and as servants to Government, it has been our duty to bring to light the medicinal resources of the country. Had we done so the substantial benefits now resulting to Government and ourselves would have been very great.

Many of our native subordinates, the sons or relatives of Hakeems, no doubt began life with considerable confidence

* See Hooker and Thomson's "Flora Indica," p. 198.

in, and some knowledge of, native remedies, which it is to be feared have been all but lost under the influence of our example. Had we, by the light of Western Science, fostered and modified that hereditary knowledge, what a goodly and useful superstructure might have been erected on such a foundation. Generally speaking, too, Dispensary patients will be found to have less dread of, and more confidence in, native than in European remedies; and there seems no cause why we should not take advantage of these feelings, so as to discontinue to a large extent the use of European drugs in Dispensary practice. With a view therefore to direct attention to the medicinal resources of India, I purpose describing a few common but efficient remedies, to be found in any bazaar. As a preliminary it may not be unserviceable to shew how *extracts, tinctures*, &c. may be made, with no other apparatus than such as can always be constructed in any out-station with material on the spot.

Tinctures.

These are prepared more readily and in general better by percolation than by maceration, and apparatus for the process may be constructed as follows. Take the glass chimney of an argand lamp, the largest available, and a jar or wide-mouthed bottle. In a cork, fitting the mouth of the jar or bottle, cut a hole sufficient to receive and hold in place the small end of the chimney, and bore in it another small hole to permit the escape of air. Then having tied a piece of muslin over the end of the chimney insert it in the hole. The substance to be operated on is then, having previously been reduced to powder, to be dropped lightly into the chimney, and the spirit in due proportion gradually added. The tincture then descends in drops into the jar or bottle. It is well to observe the exact quantity of spirit necessary to moisten in the first instance the whole of the powder; as on the conclusion of the process, if the same quantity of water be added, the whole of the retained spirit will be displaced and recovered as tincture.

Extracts.

These are made either from expressed juices of plants, or from a solution of their active constituents in water or spirit. For the purpose of expression, after the leaves have been well pounded, place them in the centre of a square of very strong cloth, held between two persons over a dish.

Then let them fold over the cloth in the usual way, and by twisting the ends in different directions, a considerable quantity of juice will be obtained. A more efficient plan however is to have a small wedge press, which any carpenter will make in a day. It consists of an oblong wooden frame about 8 inches wide and 12 inches deep inside, with two wedges each $7\frac{3}{4}$ inches wide by 16 inches long, and 6 or 8 pieces of hard board $7\frac{3}{4}$ inches wide by 14 inches long. The sides and ends of the frame must be of strong plank, and the ends well secured by strong iron bolts. When in use the bruised leaves are to be put into gunnie bags, each 16 inches by 8 inches, and the bags then to be put into the frame, with a piece of board between every pair of bags, until there is just room left at one end to insert a wedge with its thick end down, and to drive home the other with its small end down. As the last wedge descends the juice will flow out in streams.

The juice thus procured, if possessing narcotic qualities, must then be evaporated to the proper consistence in the sun, as fire-heat completely destroys extracts of that class. Indeed in so far as regards narcotic extracts we can in India produce much better articles than the manufacturer in England, who having but a feeble sun is obliged to have resource to artificial means of evaporation, all of which more or less deteriorate such preparations.

Common flat plates make excellent evaporating dishes. To reduce to proper consistence extracts prepared from a decoction, get some earthen pots shaped like the common copper cooking pot. Fill these to within a few inches of the brim with water, and set them over a charcoal fire. Then having put the fluid to be evaporated into common soup plates, set each plate like a lid over a pot, and keep up the heat until proper consistence has been obtained.

Distilled Waters and Volatile Oils.

For the preparation of these an efficient still may be made with an earthen pot (like the common water *chatty*) as a boiler, a tin capital to fit into its mouth and a long tin pipe encased in a tin Liebig's refrigeratory. The whole can be procured for less than two Rupees.

We now proceed to take up the subject proper of this paper.

CLASS I.

Antacids.

India is well supplied with medicines of this class in Lime, Potash and Soda. The first requires no notice, and the second is in general obtained in a form of so little practical value, that we shall pass over it in silence.

Sodæ Carbonas Impura.

Kārum..	*Tam.*
Poonheer Karum..	
Kār..	*Hind.*
Sedgie Muttie	
Booniroo.	*Tel.*
Savittiemunnoo oppoo...	

This substance is prepared from various earths and is found in the Mysore country in the beds of some tanks. Ainslie states that it is also made from the ashes of some plants on the Malabar Coast.* As found in the bazaar it is in general in rough, porous cakes of a greyish colour, containing much mud and other impurities. The natives purify it, as they do table salt, by repeated boiling and straining through cloth, but in general use so much heat as to produce a *Carbonas exsiccata.* As thus prepared by them the salt is always of a very dirty colour. The officinal mode of preparation of the *sodæ carbonas* of the London Pharmacopœia is so simple, that it does not require any remarks.

Carbonate of soda is largely used in the manufacture of soap, and a full description of the process will be found at page 724 of Thomson's "London Dispensatory." Ground-nut oil may be substituted for olive oil. There is another process by which the glycerine is retained in the soap, but either the fat or the alkali will be in excess. The materials are combined at a temperature below 212°. The alkali used is prepared from purest commercial soda, and is concentrated by evaporation. The proper proportion of fat is melted and the lye of known density is measured out, heated and stirred into the melted fat; on which saponification takes place and the soap solidifies on cooling.

In its action carbonate of soda is antacid, antilithic and diuretic. Its preparations are the *Sodæ Carb. exsiccata* L. and the *Sodæ Carb. Aqua.* D.

The following table from Christison's "Dispensatory"

* See also Cleghorn's "Forests and Gardens of South India," page 145.

exhibits the respective proportions of the several acids and alkaline carbonates to be used for effervescing powders.

	Car. Sod.	*Bic. Sod.*	*Car. Pot.*	*Bic. Pot.*	*Sesq. Amm.*
Tartaric acid 30 grains..57	34	28	40	24
Citric acid 30 grains.....64	38	32	44	23
Lemon-juice oz. i..... ...76	45	38	54	32

After effervescence the solutions are neutral or feebly alkaline.

Dose.—gr. x. to gr. xxx. twice or thrice a day.

CLASS II.

Anthelmintics.

As the inhabitants of India frequently suffer from intestinal worms, we accordingly find numerous native vermifuges. Indeed some of the best remedies of this class in the English Pharmacopœia, are products of India.

Punica Granatum.

N. O. Myrlaceæ.

L. S. Icosandra monogynia.

Magilam.. ... ... *Tam.*
Anár ... ... *Hind.*
Dadima... ... ... *Tel.*

Arborescent; leaves oblong, inclining to lanceolate, opposite; calyx 5 cleft; petals 5; fruit large, globose, crowned by the somewhat tubular limb of the calyx; seeds numerous, nestling in a pellucid pulp; flowers nearly sessile, scarlet.—*Wight and Arn. Prod.* i. 327.

The pomegranate was seen by Royle growing wild on the Himalayas, but was introduced into the gardens of India from Persia. It is now common in every part of the country, being a remarkably hardy plant. The flowers and rind of the fruit have considerable astringency, but are seldom used as medicines at the present day in European practice.

The bark of the root has long enjoyed a deservedly high reputation as a vermifuge, in cases of tape worm; but it should always be used fresh, as it undoubtedly becomes less active when old and dry. The root is large, woody, hard and knotty, and its bark has been found to contain tannic acid, wax, gallic acid and a principle like mannite. It is administered in the form of decoction, and acts most energetically given on an empty stomach, and when joints of the worm are coming away naturally. It always causes

more or less griping pain and nausea, and at times even vomiting. Afterwards it occasions several stools containing joints of the worm, and may increase the flow of urine.

Dose.—Macerate 2 ounces of bark, bruised, in 2 pints of water for 24 hours, and then boil the whole down to 1 pint and filter. Divide this into 3 doses, to be given with an interval of half an hour between each dose. It is said that the same quantity of bark exhausted by 15 ounces of cold water, by displacement, yields a much more active preparation.

Allium Sativum.

N. O. Liliacea.
L. S. Hexandria monogynia.
Vullay Poondoo. ... ... *Tam.*
Lassun. ... ... *Hind.*
Velligudda. ... ... *Tel.*

Stem about 2 feet high, flat-leaved; leaves glaucous, distichous, channelled above, acute; spathe single, calyptriform, horned; umbel bulbiferous; flowers, pink, red, or whitish, stamens 3 pointed; bulbs clustered, several enveloped in the same silvery skin.—*Roxb. Flor. Ind.* ii. 142; *Royle Mat. Med.* 593 (Edition 1847).

Garlic is mentioned as an article of food in Numbers xi. 5; and in India and Spain it is still extensively used as a condiment. So far as my observation goes I have reason to think that in India the inhabitants of malarious districts use it most freely. The bulb is the officinal part of the plant, and its active principle is a volatile oil heavier than water, intensely penetrating in its odour and of an acrid taste.

Garlic was highly esteemed by the ancients as a medicine, being the σκόροδον of the Greeks. Native practitioners in India prescribe it to promote digestion and quicken the circulation, and in cases of asthma they consider it a powerful expectorant and antispasmodic. It communicates a persistent, strong disagreeable odour to the breath. In large doses it is irritant and produces headache and febrile restlessons. Its stimulant, diuretic and expectorant actions are generally acknowledged. It has long been celebrated as an effectual remedy in ascarides; and proves most beneficial when administered at the same time by the mouth and in clysters. An infusion of the bulb in milk, well sweetened with sugar, is the best mode of administering it to children.

Dose.—In substance ℥ ss. to ʒ i. Of an infusion (℥ ss. of bulb to ℥ vi. of water or milk) two ounces three times a day.

Rottlera Tinctoria.

N. O. Euphorbiaceæ.

L. S. Diœcia icosandria.

Capilapodie. ... ... *Tam.*
Vasanta gunda. ... ... *Tel.*
Camal. ... ... *Hind.*

Arboreous; leaves alternate, oblong, acuminate, entire, three-nerved; racemes axillary and terminal; *male tree*, calyx two-cleft, coralla none; *female tree*, calyx four-toothed, stylest hree, feathery; capsule tricoccous, size of large pea and covered with red powder.—*Roxb. Fl. Ind.* iii. 827; *Drury's Us. Pl.* 540.

This is a common tree in most parts of India, and well known to natives as the plant producing the powder which yields the *Cupela-rung*, or *Kamila* dye. Kamila is the powder rubbed off the capsules, and is of a beautiful rich red colour. It is hardly acted on by water, but communicates to spirit or water containing an alkali a deep orange colour. Viewed under the microscope it is seen to consist of large irregular-shaped granules, mixed with stellate hairs. Each granule consists of a tough membrane forming numerous sacculi, which contain the colouring matter. Until a sacculus is ruptured it does not of course yield up its contents; and as they are but slowly ruptured by spirit, a general error has arisen in supposing that the granules do not yield a colour from solution by, but only from simple suspension in, the spirit. As a dye the Kamila does not require a mordant, but is merely mixed with water containing about half its weight of Carbonate of Soda. This on silk produces a rich orange tint of great beauty and stability.

Kamila has for some time enjoyed considerable repute as a vermifuge. Dr. Royle ascribes its action to the presence of the stellate hairs already mentioned. The tincture of Kamila, however, which is said to be a very active preparation, contains no hairs, as they are all retained on the filter. There can be little doubt, however, that the stellate hairs would by mere mechanical action increase the anthelmintic powers of the drug, and I would therefore recommend the use of the powder in preference to the tincture. The tincture is made as follows:—

Take four ounces of Kamila, and having put it in one pint of Alcohol, macerate for 24 hours and then filter.

Dose.—Of the powder 15 to 30 grains, and of the tincture one drachm in water.

The following table exhibits the names, &c. of a number

Name.	Nat. Order.	Native Names.			Dose, &c.
		Tamil.	Telugu.	Hind. or Duk.	
Vernonia anthelmintica.	Compositæ.	Caat Siragum.	Actuvi jilakarra.	Buckchie.	Seeds; 52 grs. twice a day.
Sphæranthus hirtus.	Do.	Kottang karundie.	Bodatarapu chettu.	Moondie.	Seeds in powder.
Jussiæa suffruticosa.	Onagraceæ.	Carambu.	.....	.....	Decoction.
Euphorbia thymifolia.	Euphorbiaceæ.	Sittrapaládi.	Biduru nana biyyam.	.....	Leaves and seeds in powder, 1 dr. in 24 hours.
Guilandina bondue.	Leguminosæ.	Kalichikai.	Gachcha chettu.	Gudgega.	Kernels, 3 to 6 grs. 3 times a day.
Butea frondosa.	Do.	Porasum verei.	Moduga chettu.	Palas.	Juice of seed, 1 tablespoonful and ½ twice daily.
Clitorea ternatea.	Do.	Karka kartun.	Tella ghentana vayroo.	Khagin.	Seeds in powder.
Bryonia epigea.	Cucurbitaceæ.	Kolung kovay kolung.	Akasa geruda gadda.	Rawkus guddu.	Root, 52 grains in 24 hours,
Strychnos colubrina.	Loganiaceæ.	Modira caniram.	Naga mushini.	.....	Tinct. of root.
Cleome viscosa.	Capparideæ.	Nayavayl'ei.	.....	Chorie ajooan.	Tea spoonful of seeds twice daily.
Carica papaya.	Papayaceæ.	Pappali pullum.	.....	Papaya.	Juice of unripe fruit.
Dæmia extensa.	Asclepiaceæ.	Valay partie.	Jutuga.	Utrun.	Decoct. of leaves, 3 table spoonfuls.
Aristolochia bracteata.	Aristolochiaceæ.	Addatmapalay.	Gadide gadapara.	.....	Infus. of dry leaves, 2 ounces twice daily.
Ruta angustifolia.	Rutaceæ.	.....	.....	Sudab.	Expressed juice, 1 tea spoonful for child of 3 years.

of other vermifuges some of which the European practitioner may at times, in obstinate cases, be glad to employ.

Antispasmodics.

India is well supplied with medicines of this class. Two of the most common and best are Assafœtida (Hing, *Hind.*), and Camphor (Kupoor, *Hind.*). Galbanum (Biroja, *Hind.*) is also to be met with in most bazaars; and all three are too well known to require any notice here.

Ruta Angustifolia.

N. O. Rutaceæ.

L. S. Decandria monogynia.

Arooda ... ... *Tam.*
Sudab ... ... *Duk.*
Arudu } ... ... *Tel.*
Sadápa }

Under shrub 2—3 feet, leaves glaucous, supra-decompound, four times longer than broad, lobes cuneate—oblong; calyx 4—partite; petals 4, longer than the calyx, unguiculate, ciliated; filaments subalate—filiform, glabrous; anthers ovate, obtuse; torus marked with nectariferous pores; carpels 4, partly combined; styles 4, distinct at base, united above into single pistil; capsules 4, partly united.—*Wight and Arnott's Prod. Vol.* i., 146.

Rue is to be found in most native gardens, being a popular remedy in various complaints of children. It has a strong peculiar smell, and an acrid and bitter taste dependant on a volatile oil, which is nearly dissipated by drying the plant. It should always therefore be used fresh. The Oleum Rutæ is obtained by distillation of fresh leaves and unripe capsules in water. They yield about 7 grs. in 1,000 of the oil, which is yellow and acrid, and has a powerful smell. An infusion is prepared by infusing one ounce of herb with a pint of boiling water, in a close vessel, for an hour. A syrup is made by dissolving 12 drops of oil in half an ounce of rectified spirits, and adding the solution to a pint of simple syrup. The syrup is an admirable remedy in the spasmodic affections of children.

Dose.—Of Oleum Rutæ ♏ ii. to ♏ v. in sugar and water; of the Infusum Rutæ ℥ i. to ℥ ii.; of the Syrupus Rutæ a teaspoonful.

Nardostachys Jatamansi.

N. O. Valerianaceæ.

L. S. Triandria monogynia.

Shadamangie... ... ... *Tam.*
Jatamansi ... ... { *Duk.* / *Tel.*
Balch'har ... ... *Hind.*

Herbaceous, with a long hairy tap root; stems perennial,

very short, simply divided into a number of shaggy scaly crowns from which the leaves proceed; branches erect, a few inches high, downy; leaves obovate, lanceolate, three-ribbed, downy, those next the root acute, the upper obtuse. Flowers pale pink, clustered in the axils of the upper leaves. Limb of the calyx five-parted, lobes ovate, oblong, acute, leafy, somewhat toothed, permanent; corolla regular, ecalcarate, obtusely five-lobed, bearded in the throat, stamens 4, attached to the bottom of the corolla, stigma capitate, capsule 3-celled.—*Bengal Dispensatory*, 405.

This plant, as proved by the researches of Sir W. Jones,* is the spikenard of the ancients. It was first regularly described and figured by Dr. Roxburgh,† from living specimens as the *Valeriana Jatamansi*. It is a native of Nepaul, the Himalayas and the Deccan; and has for ages been highly esteemed by Eastern nations on account of its odour and medicinal virtues. Some years ago it was introduced into England, where it has gained considerable repute in the treatment of such diseases of the nervous system as hysteria, epilepsy, delirium tremens, &c. According to the best authorities it is an antispasmodic of considerable power, and "a perfect representative of the *valerian* of the English Pharmacopœia." The root, which is the officinal part, is of a blackish colour, and, according to Roxburgh, resembles the tail of an ermine or small weasel. An infusion and tincture are its most active preparations. The infusion is made by macerating for one hour, in a close vessel, ℥ ss. of bruised root, in O ss. of boiling water. The tincture is prepared by exhausting ℥ ii. of powdered root with ℥ xvi. of proof spirit.

Dose.—Of Infusum Nardostachyos ℥ ss. to ℥ i.; of Tinctura Nardostachyos ℥ i. to ℥ ii.

CLASS IV.

ASTRINGENTS.

Medicines of this class are very common in India; indeed a species of catechu is much relished, and constantly chewed by every native that can afford the *luxury*. Of such as are articles of the Materia Medica in any of the British Pharmacopœias, we shall give the vernacular names of the more important.

Acetum	Kadi	*Tam.*
	Cirka	*Duk.*
	Polla neelloo	*Tel.*

* See an interesting paper in *Asiat. Res. Vol.* iv. 109.

† *Asiat. Res. Vol.* iv. 433.

Alumen	Paddicarum	*Tam.*
	Puttakarie	*Duk.*
	Paddicara	*Tel.*
Catechu.	Cutt (the Catechu)	*Hind.*
	Wothalay (the tree)	*Tam.*
	Podala manu (do.)	*Tel.*
	Khaira (do.)	*Hind.*
Creta	Simie chunambu	*Tam.*
	Velaitee chunna	*Duk.*
	Simma soonum	*Tel.*
Cupri Sulphas	Toorisha	*Tam.*
	Neelatota	*Duk.*
	Tutiya	*Hind.*
	Toorishie	*Tel.*
Ferri Sulphas	Annabaydie.	*Tam.*
	Heerah cashish	*Duk.*
	Casis	*Hind.*
Kino	Toomble hoan / Dummalackwayn	*Tam.*
	Vengay (the tree)	*Tam.*
	Peet-shola (do.)	*Hind.*
	Vegisa	*Tel.*
Plumbi oxydum.	Marudar Singhie	*Tam.*
	Marudar Sang	*Hind.* / *Duk.*
Calamina	Madaltootum	*Tam.*
	Dusta	*Hind.*

BUTEA FRONDOSA.

N. O. Leguminosæ.

L. S. Diadelphia decandria.

Poorasum ... ... *Tam.*
Moduga chettu ... ... *Tel.*
Palas ... ... *Hind.*
Dhak ... ... *Beng.*

Aboreous; leaves pinnately 3-foliate; leaflets large, roundish, ovate, pubescent on under side; racemes many flowered, simple, lax; calyx-segments short, slightly acute, several times shorter than the tube; corolla papilionaceous, densely pubescent, vexillum ovate, acute, flowers of a bright scarlet colour; legume flat, thin, membranaceous, velvety, with a large, solitary, compressed seed at the apex.—*Wight and Arnott's Prod.* i. 261; *Roxb. Flor. Ind.* iii. 244.

This tree, so well known as the *Bastard-teak*, was first particularly brought to notice by Dr. Roxburgh. It is very common, and when in flower is perhaps the most splendid tree in the world.

Its leaves, fastened together with pegs, are used in every bazaar as substitutes for wrapping paper; the gorgeous flowers yield a brilliant yellow dye; lac is found on its twigs and petioles; its seeds are anthelmintic, and the bark yields red juice, which on hardening forms the Palas or Bengal Kino.*

This substance, obtained by making incisions in the bark during the hot season, is of brittle texture, deep garnet-red in colour, soluble in water, partially soluble in alcohol, and very astringent in taste. "It is extremely rich in tannic and gallic acids, and contains moreover arabine and ulmine." As an external application it is a most powerful astringent, and not less efficient as an internal remedy. It may be administered in the form of powder or tincture. To prepare the Tincture; take of Palas-Kino in powder ℥ iiiss., and an equal quantity (in bulk) of fine white sand; mix, place in percolator and exhaust with O ii. of rectified spirit. The Palas-Kino may also be substituted for the true Kino, in the *Pulvis Kino Compositus*. A solution in water may be administered as follows; Palas-Kino in powder 3 i.; mucilage of gum ℥ i.; cinnamon water ℥ v.; two table-spoonsful occasionally.

Dose.—Of Pulvis Palas-Kino gr. ii. to gr. x.; of Tinctura Palas-Kino 3 i. to 3 ii.

Ægle Marmelos.

N. O. Aurantiaceæ.
L. S. Polyandria monogynia.

Vilva-marum	*Tam.*
Maredu chettu	*Tel.*
Bel, Bael	*Hind.*
Bilva	*Sans.*

Tree armed with simple spines; leaves pinnate; leaflets oblong or broad, lanceolate, crenulate, middle leaflet petiolate, lateral ones almost sessile; common petiole terete;

* True Kino is procured in India from *Pterocarpus marsupium*, a native of Malabar.

petals 4—5, patent; stamens 30—40, filaments distinct; style short and thick, stigma capitate; fruit baccate with a hard rind, 8—15 celled; cells 6—10 seeded; seed-coat woolly, covered over with a tenacious liquid.—*Wight and Arn. Prod.* i. 96.

The ripe Bael fruit has long been famous in India, for its delicious taste and exquisite fragrance. According to Indian poets it sprang from the milk of Shree, the goddess of abundance. For some years the unripe fruit has enjoyed, both in England and in India, considerable repute as a remedy in chronic dysentery. In appearance the Bael fruit is somewhat like an orange. Its cells contain a large quantity of a tenacious transparent substance, which becomes hard and retains its transparency on drying. Both pulp and shell contain tannic acid, an essential oil, a bitter principle and a vegetable acid. It undoubtedly is a most safe and certain remedy in chronic dysentery, exerting a tonic and antiseptic influence, besides a powerful astringent action. The astringent action would seem to depend somewhat on the mucilaginous contents of cells, but chiefly on the tannic acid. When ripe the Bael fruit becomes a mild warm laxative, with a sweetish taste. According to a recent writer, "it may be said in all cases to regulate the bowels." The fruit of the Feronia elephantum, or wood-apple, which is somewhat like that of the Bael, is often substituted for it in hospital supplies, and being comparatively useless, has thus led many to treat with neglect the Bael. A decoction is the form in which this remedy is commonly administered. It is prepared by boiling slowly for an hour, in a close vessel, one pound of bruised green fruit in two pints of water. A fluid Extract, a very elegant preparation, may be made by concentrating the decoction to the requisite thickness in a tin or other vessel, heated by steam or boiling water, and then adding rectified spirit in the proportion of two ounces to every pound of extract.

Dose.—Of Decoctum Bael ℥ i. to ℥ ii.; of Extractum Bael Fluidum ʒ i. to ʒ ii.

CLASS V.

CATHARTICS.

The mineral cathartics to be met with in India are few and unimportant, but the vegetable kingdom yields many valuable ones; and whether the practitioner wishes to prescribe a *Laxative*, *Purgative* or *Hydragogue*, he will have no

difficulty in finding a suitable indigenous remedy. The following articles have a place in the London Pharmacopœia, and therefore require no special notice here.

Croton tiglium	Nervalum cottay	*Tam.*
	Jumal gota	*Hind. Duk.*
	Naypalum	*Tel.*
Ricinus communis	Sittamunak	*Tam.*
	Amudapu chettu	*Tel.*
	Erundie	*Duk.*
	Arend	*Hind.*
Citrullus colocynthis	Paycoomuti	*Tam.*
	Puchcha-kaya	*Tel.*
	Indrawan	*Duk.*
	Indrain	*Hind.*
Cassia elongata	Nilaverei	*Tam.*
	Nela-ponna	*Tel.*
	Soona-mukhee	*Hind. Duk.*
Cathartocarpus fistula	Konnekai	*Tam.*
	Rela chettu	*Tel.*
	Amultas	*Hind.*
Manna	Shirkisht.	
Sulphur	Gendayum	*Tam.*
	Ghendagum	*Tel.*
	Gunduck	*Duk.*

Pharbitis Nil.

N. O. Convolvulaceæ.

L. S. Pentandria monogynia.

Kaladana, Mirchai ... ... *Hind.*

Neel-Kalmee ... ... *Beng.*

Annual, twining, hairy; leaves alternate, petioled, broad-cordate, 3 lobed, downy; peduncles axillary, length of the petioles, from 2 to 3 flowered; bracts and sepals linear; flowers large, of a beautiful light, but bright, blue colour.—*Roxb. Flor. Ind.* i. 501.

This beautiful blue creeper is to be met with in most parts of India, and is frequently cultivated for trellis work. The properties of its seeds, however, are by no means generally known, and in many parts of the country the plant has not even any special native name. Roxburgh notices that the seeds were used as a purgative, but O'Shaughnessy was the first to bring them particularly to

the notice of the profession in India. They are of a black colour and angular in shape; and their powder is of a grey colour, has a sweetish taste and a heavy smell. On analysis they yield resin, gum, starch, fixed bland oil, fibre and colouring matter. The powder in doses of 30 or 40 grains acts as quickly, safely, and pleasantly as jalap; producing on an average 5 stools within $2\frac{1}{2}$ hours. The Bengal Pharmacopœia gives the following preparations:—

1. *Extract of Kaladana.*—Powdered seeds any convenient quantity, moisten and exhaust the powder by percolation with rectified spirit; distil off $\frac{3}{4}$ths of spirit, and evaporate the remainder on a water bath to a soft pillular consistence.

2. *Tincture of Kaladana.*—Bruised seeds 8 ounces, proof spirits 2 pints; prepare by percolation.

3. *Compound Powder of Kaladana.*—Seeds finely powdered, Bitartrate of Potash of each 3 ounces, Ginger 2 drachms; mix.

Dose.—Of Pulvis Kaladana gr. 30 to gr. 40; of Extractum Kaladana gr. v. to gr. x.; of Tinctura Kaladana ʒ i. to ʒ ii.; of Pulvis Kaladana Compositus gr. xx. to gr. xl.

TERMINALIA CHEBULA.

N. O. Combretaceæ.

L. S. Decandria monogynia.

Kadukai-marum	*Tam.*
Karaka chettu.	*Tel.*
Kuldah	*Duk.*
Har, Hara	*Hind.*

Tree; leaves nearly opposite, shortly petioled, ovate or oblong, acutish or obtuse, obtuse or cordate at the base, quite entire, when young clothed with glossy silky hairs, upper surface inconspicuously dotted, under closely reticulated with purplish veins; a gland on each side at apex of petiole; spikes terminal, often panicled; drupe oval, glabrous; nut irregularly and obscurely 5-furrowed.—*Wight and Arn. Prod. Vol.* i. 313.

The unripe dried fruit of this tree is known as the *Black-myrobolan, Zengi-har (Hind.),* and *Singhi (Tam.).* "It is about the size of a pistachio-nut and of a deep black colour, oblong, pointed, slender, and has scarcely the rudiments of the nut." It has long been employed in India, Persia, and Arabia as a purgative. Dr. Twining considers it a mild and pretty certain aperient, with some tonic power.

Mr. Waring experimented with the ripe fruit or *kadukai*, and found that its powder, in 3 ii. doses, produced from 3 to 6 copious watery stools without vomiting or griping; and its decoction (6 fruit in ℥ iv. of water,) 3 to 5 copious loose stools without any disagreeable effects. The unripe fruit is directed to be used by all the older writers, and would appear to be more potent and certain than the ripe. A decoction of *Black-myrobolan* may be made as follows;—Powdered Myrobolan ℥ i., Water ℥ viii., Honey 3 ii.; boil and strain.

Dose.—Of Pulvis Zengi-har 3 i. to 3 ii.; of Decoctum Zengi-har ℥ iii. to ℥ iv.

CLASS VI.

Diaphoretics.

But very few diaphorectics are truly Indian products. In 1855 specimens of Sassafras were sent to the Madras Exhibition from Burmah, but beyond getting a place in the catalogue, the fact of this substance being found in our Eastern possessions does not seem to have met with any further notice. The Cephaelis Ipecacuanha, which has been introduced from Brazil, thrives well in various parts of India; but strange to say no attempt has been made to grow it in quantity sufficient to meet the wants of the whole service. The only mineral diaphoretic to be met with in ordinary bazaars, is the Antimonii Sesquisulphuretum *(Surmah, Hind.)*. Although few in number, however, Indian diaphoretics are not less trustworthy than those of the British Pharmacopœias, if equal care be taken, during their administration, to keep the surface of the body warm with clothing, and to avoid cold drinks, draughts and other agencies inimical to diaphoresis.

Calatropis Gigantea.

N. O. Asclepiadeæ.

L. S. Pentandria digynia.

Yercum	*Tam.*
Jilledu	*Tel.*
Ark, Mudar...	*Hind.*

Shrub; leaves opposite, decussate, embracing the stem, broad, wedge-form, bearded on the upper side at the base, upper surface pretty smooth, under covered with a white woolly pubescence; segments of corolla patent, marcescent, reflexed with revolute margins; leaflets of stamineous corona shorter than the gynostegium; at the base obtuse

and circinately recurved, at the apex incurved and subtridentate; follicles smooth, ventricose; seeds comose; flowers rose colour and purple.—*Roxb. Flor. Ind. Vol.* ii., 30; *Wight's Contribut.* 53.

This is a common shrub all over the country, growing in waste ground and especially delighting in rubbish and ruins. It abounds in an acrid milky juice, long famous as a medicine in India. The silky fibres, that give wings to the ripe seeds, have of late, in combination with cotton, been made into a kind of cloth. The *liber* of the bark yields fibres of great beauty and strength, as easily manipulated as flax, and capable of resisting the action of moisture longer than any other fibre. The root bark and inspissated juice are powerful alteratives, purgatives, emetics, and diaphoretics; and according to Roxburgh have long been used by natives in epilepsy, hysteria, convulsions, spasmodic affections, paralytic complaints, poisonous bites and venereal complaints. The bark of the root seems to possess in greatest activity the useful properties of the plant. When dry it is of a greyish yellow colour, has a heavy smell and acrid nauseous taste. It contains a peculiar extractive principle called *mudarine*, which "has the singular property of gelatinizing as it is heated, then liquifying again, and as the solution cools gelatinizing as before." The powdered bark, as will hereafter be noticed, is an active emetic. In smaller doses it proves nauseant, powerfully diaphoretic, and after three or four doses in succession gently cathartic. It may be substituted for Ipecacuan in the *Dover's Powder;* and O'Shaughnessy says:—"In dysentery it may be safely substituted for Ipecacuan in Mr. Twining's and other formulæ, about twice the quantity being used in each dose."

Dose.—Of Pulvis Calatrop. giganteæ gr. ii. to gr. v. every half hour.

Tylophora Asthmatica.

N. O. Asclepiadeæ.

L. S. Pentandria digynia.

Codegam, Coorinja. ... ... *Tam.*
Untamool. ... ... *Hind.*
Kaka pala, Verripala.... ... ... *Tel.*

Twining; young parts downy; leaves opposite, ovate or somewhat roundish, acuminated, cordate at the base, glabrous above; peduncles shorter than the leaves and bearing 2—3

sessile few-flowered umbels ; flowers rather large, on long pedicels tinged with purple ; segments of corolla 5, acute ; leaflets of corona fleshy, clasping the base of the gynostegium ; follicles glabrous, divaricate.—*Wight's Contrib.* 51 ; *Roxb. Flor. Ind. Vol.* ii., 33.

This is a common plant in Southern India, flowering during the cold season. It has long been used as an emetic, and Ainslie states that "it has been found an extremely useful medicine in dysenteric complaints." Roxburgh also remarks :—"I have often prescribed it myself, and always found it answer as well as I could expect Ipecacuan to do."*

Subsequent writers have all spoken of the Tylophora in the same confident terms of commendation, and there seems no reason why it should not be employed to the complete exclusion of Ipecacuan in all our native hospitals. The root, which is the officinal part, consists of many, long, thick, whitish, fleshy fibres, issuing from a small woody head. It has a disagreeable smell when fresh, and is an active emetic and diaphoretic. It may be substituted for Ipecacuan in *Dover's Powder.*

Dose.—Of Pulvis Tylophor. Asthmaticæ gr. v., repeated frequently.

Hemidesmus Indicus.

N. O. Asclepiadeæ.
L. S. Pentandria digynia.

Nunnari, ... *Tam.*
Sugandhi pala, ... *Tel.*
Mugraboo, Ununtamool, ... *Hind.*

Twining, glabrous ; leaves varying from cordate-ovate, cuspidate, to narrow, linear, acute, often oblong, lanceolate ; cymes often subsessile, sometimes peduncled ; scales of corolla obtuse adhering to the tube from base to apex ; follicles slender, straight ; flowers small, outside green, inside a deep purple.—*Rox. Flor. Ind. Vol.* ii. 39 ; *Wight's Contrib.* 63.

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* "Dr. Russell was informed by the Physician General at Madras Dr. J. Anderson) that he had many years before known it used, both by the European and Native Troops with great success in the dysentery which happened at that time to be epidemic in camp. The store of Ipecacuana had, it seems, been wholly expended, and Dr. Anderson finding the practice of the black doctors much more successful than his own, acknowledged, with his usual candour, that he was not ashamed to take instruction from them, which he pursued with good success."—*Roxb. Flor. Ind. Vol.* ii. 34.

This plant is common all over India, its root being well-known as the *Country Sarsaparilla*. It has long been held in high estimation as a medicine by natives, and is to be met with in every bazaar. The roots are long and slender, covered with rust coloured, very fragrant, bark, the odour, which has been compared to that of *Tonquin* bean, remaining after drying. *Country Sarsaparilla* contains a volatile crystallizable acid, on which its peculiar smell depends.

It is administered by natives to purify the blood, and in cases of stranguary and gravel. O'Shaughnessy mentions that, in doses of ℥ ii. infused in a pint of water, its diuretic action is very remarkable. It is a very decided diaphoretic, with tonic and alterative actions; and, in the many cases in which the true sarsaparilla is employed, much more to be depended upon than that drug. It is administered in the forms of infusion and syrup. To prepare the infusion —Take of powdered root, ʒ ii.; boiling water a pint, macerate for 2 hours. Mr. Jacob Bell of London gives the following method for making the syrup;—"Root of Hemidesmus Indicus, ʒ xvi.; refined sugar lb. i.; distilled water, O iii; bruise the root sufficiently to separate the bark by sifting, and reject the wood; add to the bark an equal bulk of washed sand; moisten with water (℥ iii. —iv.), so as to insure its intimate mixture and pack it well in a displacement apparatus; add as much water as it will absorb; macerate for 4 hours, and displace the liquor by the addition of a further portion of water; reserve the first six ounces; add more water till it passes through tasteless, then evaporate the latter portion to 3 ounces, in which, with the addition of the first 6 ounces, dissolve the sugar with as moderate a heat as possible."

Dose.—Of Infusum Hemidesmi ℥ ii. to ℥ iv.; of Syrupus Hemidesmi ℥ i. to ℥ ii.

Art. III.—*On Abnormal Formation of the Genital and Urinary Organs.* By R. S. Mair, M.D., &c., Surgeon, Madras Volunteer Guards.

HERMAPHRODITIC MALFORMATION.

There is no recorded instance of a true and perfect hermaphrodite in the human species, that is, one in which both the sexes were entirely and equally represented, in which the male and female reproductive organs existed so anatomically perfect, as to enable the malformed being to exercise its proper physiological functions of either or both of the two sexes; those supposed to be so, being either males with some defect in the organs of generation, giving them, as well as the general appearance of the individual, a resemblance to those of the female, or vice versa.

In almost every instance of supposed or spurious hermaphroditism, there is either such a preponderance, however little it may be, of the external or internal, the primary or secondary, sexual organs, as to render it comparatively easy to form an opinion—to say which sex prevails; or when these organs *appear* to be equally divided between both sexes, there may be present certain physiological acts and feelings sufficient to constitute a distinction. Cases do, however, present themselves, in which the departure from the normal development of the generative organs approaches the true hermaphroditic state very closely, though so rarely, that I am induced to place on record an interesting example, which came under my notice here, and where there was considerable room for doubt as to which sex the subject of it belonged. These are the cases in which it is not only important, for medico-legal and other reasons, to decide the sex, but in which it is more difficult and perplexing than many suppose to determine with precision, during life, the true predominant sex of the malformed individual. Both sexes *seem* to be represented in the one person, and neither the one nor the other can be said to prevail.

This of course applies to our examination of the case during life, for some of these persons considered while alive, to be merely malformed as to their external organs, have been found on post-mortem inspection to possess internal reproductive organs of either one or both sexes in a more or less perfect state. If we could be perfectly certain of

the existence of a uterus and ovaries in the one, or of the presence of their supposed analogues, the testes and prostatic utriculus, in the other, even although the other organs of generation resembled those of the opposite sex in each, or though each might otherwise deviate from the normal type, we would have little difficulty in deciding as to whether the individual belonged to the male or the female sex. But the presence of these organs, characteristic of each sex, it is often utterly impossible to ascertain during life. The uterus and ovaries may be present in the abdominal cavity, either so small or so situated, as to be unascertainable; the testes and prostate may really have a local habitation, though in the one case not in the scrotum and in the other so rudimentary, or minute, or so placed, as to be incapable of being recognised.

It is not surprising then that doubts should occasionally arise as to the predominant sex of the parties concerned, and there are instances on record of persons whose sex was mistaken (in childhood particularly,) who have been doomed through life to submit to the education and habits of the sex not truly their own. The case now to be related is one, in which it was of no little importance to the individual that she should have her sex decided.

Anne C. called at my house, and after some preliminary conversation, requested me to examine her, as she said there was something wrong, which prevented her menstruating. She was a European from a Mofussil station, apparently 21 or 22 years of age, about 5 feet 4 inches in height, had on the usual modern dress of a female, and conducted herself as such. Knowing nothing as to her real state then, her appearance did not strike me as peculiar or as possessing any of the male characters; indeed my first impression from what she said, was, that she had an imperforate hymen, which obstructed the menstrual discharge. Finding on further enquiry, however, that her general health had invariably been good, and that she suffered no hypogastric uneasiness whatever, from the fancied obstruction, she was told that an examination was unnecessary. But as she, notwithstanding, urgently requested to be examined, I did so on the following day at her house in Madras, little suspecting then what was afterwards revealed. First of all there was a well formed penis, or organ representing it, about 2½ or 3 inches in length, when quiescent, and of corresponding dimensions. It was attached by its root, imme-

diately below the pubis, was supplied with a glans, corona glandis and prepuce, of the normal formation in the male. The glans was imperforate, but had a depression in the usual place of the meatus urinarius. On raising this organ, which was in a flaccid state, it was observed to cover a large fissure, the sides of which were identical with the labia majora of the female. These were well developed, quite soft and elevated, and in every respect resembled those of the female.

A careful examination was made there, and in the inguinal regions, to ascertain if there was any hard body, such as a testicle; but none was found. About half an inch, or a little less, below the root of the penis or clitoris, and in the centre of the deep fissure or cleft between the two labia, an opening existed, large enough to admit the forefinger, and surrounding it there was abundant moisture, apparently mucus from adjacent follicles. Attempts to introduce the finger into this opening (which was supposed at first to lead to the vagina) caused such a degree of violent (erotic?) excitement, that they had to be abandoned. She rolled her nates from side to side, and yet she distinctly stated, that the manual interference, which amounted to no more than a mere touch, caused her no pain. Subsequently under the influence of chloroform, a female catheter was easily passed through the opening, and as there immediately flowed through it a large quantity of urine, it was evident, that this opening communicated directly with the bladder.

It may be here noted, that when she was being placed under the influence of the chloroform, then, and on another occasion afterwards, the organ representing the penis became erect and rigid, increased considerably in size, and had its glans uncovered by the prepuce.

The finger when introduced into the opening referred to, went into a hollow cavity (the bladder) and came in contact with nothing; and further than an unusually long urethra, and the deep fissure between the two labia, there was no perceptible deviation to indicate the existence of a rudimentary vagina. One finger was introduced into the rectum, while the catheter was in the bladder, but no body resembling prostate, uterus or ovaries could be felt, nothing in fact, but the catheter, pressing on the posterior wall of the bladder close to the rectum. The adipose tissue over the pubis was abundant, and elevated, and in every respect had the appearance of a well formed mons veneris

The pelvis was moderately large; the thighs were smooth and rounded, the breasts were but little developed, the voice was not that of a man nor that of a woman, but something between both; there was no hair visible on any part of the face except a downy appearance on the upper lip, the features were rather hard, and the general expression of the whole figure was that of a *masculine woman*. There had never been any menstrual discharge, but the periodical molimina, indicative of its approach, were said to be observed regularly.

In order to test this statement, I had her removed, with the sanction of Dr. J. Shaw, to the Lying-in-Hospital, where she remained for about two months under supervision, but without the faintest perceptible indication of a menstrual discharge, or of any of the various symptoms which precede or accompany it.

While in hospital she was submitted to examination under chloroform, in presence of several Surgeons who were as much interested in the case as myself, and who also found it impossible to ascertain the existence of uterus, ovaries, prostrate or testes.

This individual had been baptized and brought up as a female from birth, always associated with females, and positively asserted that she had the sexual desires of a female. Nay more, she was most anxious to get married, and previous to my seeing her she had two offers of marriage from two distinct and separate parties. Her avowed object in consulting me was to have, what she called, the growth (the penis) removed, which she considered was the only impediment to her being married. She was especially solicitous on this point, but being assured that nothing could be done for her, she abruptly left Madras for Calcutta, and thence I was informed proceeded to England.

The first and most important question which a perusal of this case suggests is with reference to the sex.

Was this individual a malformed male or a malformed female? Or was there sufficient evidence before us to enable us to form an opinion as to which sex predominated.

Before attempting to answer these questions let us for a moment consider the mode in which the sexes are supposed to be determined in the fœtus. The ovum previous to impregnation is supposed to have no distinction of sex, but to be so formed as to be equally fitted to become a male or a female.

"In the early period of embryonic development the various central sexual organs, situated in the median line of the body, are found to be composed of two separate and similar halves, divided from each other by a vertical fissure, which, after the originally blind extremity of the intestinal canal has opened upon the perineum, forms a common aperture or cloaca for the intestinal canal, and also for the urinary and genital apparatus. After a time (about the second month in the human embryo) the opposite sides of this cloaca gradually approximate and throw out two corresponding folds, which, by their union constitute a septum that separates the rectum from the canal or portion of the fissure, that still remains, common to the urinary and generative organs; and in the same way, by two similar and more anterior folds, the urethra of the female, and the pelvic portion of that of the male, is subsequently produced. After this in the female the process of median reunion does not proceed further, and the primary perineal fissure remains, forming the vulva and vagina. In the male, however, the development, when normal, goes on to a greater extent, and the sides of the opening become so far united, as ultimately to leave only the comparatively contracted canal of the urethra to serve as a common passage for both the internal urinary and genital organs, and the situation of the line of junction of the opposite sides of the original perineal cleft, remains still marked out in the adult, by the raphe existing in the median line of the scrotum. The two lateral parts of the female clitoris unite together into one solid body, having on its under surface a slight groove or channel, indicative of the lines of conjunction of its two component parts, and the urethra is left to open at the root of this imperforated organ. In the male, on the contrary, the two primitive halves of the penis, consolidated together at an early stage along the course of their upper surfaces, come, about the third month of development, to unite inferiorly in such a manner with one another, as to form a tubular prolongation of the pelvic portion of the canal of the urethra, which is generally extended forwards along the penis through its glans."*

Now it so happens that by far the larger number of recorded cases of reported hermaphroditism can be traced either to an excess or arrest of this normal development of the

* Simpson's Obstetric Memoirs. Vol. ii., page 230.

sexual organs at some period of their evolution, the degree of malformation depending on the period of embryonic life at which this excess or arrest of development takes place. The first is usually characterised by such an abnormal growth of the clitoris as to give it the appearance of the corresponding male organ, and is frequently associated with a more or less pendulous state of the labia majora (resembling an imperfectly formed scrotum) and a semi-masculine appearance of the whole body.

Individuals so malformed constitute specimens of what has been called female Hermaphroditism, many examples of which are on record.

The second, or that form of malformation in which the development of the genital organs is arrested, is much more commonly met with, and is the one which has caused more mistakes and doubts regarding the sex, than the other.

It consists in fissure of the urethra, scrotum and perineum, constituting the male hermaphrodite, and to which the term hypospadias has been applied. In this form the genital malformation consists chiefly in imperfection of the scrotum and perineum: the scrotum from the arrest in its normal development does not descend to its natural position, but has the appearance as if drawn up over the perineum, its two halves, with a fissure or cleft between, thus resembling the labia majora of the female. The small and imperforate penis in these cases may be, as it has often been, mistaken for a somewhat enlarged clitoris, and the circumstance of the urethra opening in the perineum, having a red and tender appearance, the cleft in the perineum being in the same place and sometimes of the same size as the canal of the vagina, and generally kept moistened by mucous secretions, all tend to assimilate the malformed parts to the normal condition of the female organs.

It will be observed that there is in this description a very close analogy to that given of the genital malformation of Ann C., whose case I have already fully detailed, and although there may be every probability, judging chiefly from external appearances, that this individual was more an example of a malformed or hypospadiac male than a malformed female, yet there are other circumstances connected with the history of the case, which must prevent this opinion from being entertained without reserve. The arrest of the normal development of the genital organs, which caused the malformation probably took place, during embryonic life, at a

period, antecedent to that which constitutes the most common or hypospadiac form of spurious hermaphroditism. For it has been observed that "the earlier the arrestment of development, the distinction of the true sexual type of the malformed organs will always be less marked, because the younger the embryo, and on a similar principle, the lower we descend in the scale of animal existence, we find the difference between the organs of the two sexes proportionately the less pronounced, until at last we arrive at that primitive type in which these organs present altogether a common, neutral or indeterminate character."*

In almost every published case of that variety of hermaphroditism bearing some resemblance to Ann C.'s, one or both testicles were either found in the groin, or in each or one half of the divided scrotum, placed in the position of the labia majora, which formed an important guide in deciding the sex, as in the singular instance thus described by Otto:—"The person had lived three years in a state of wedlock with three different men, but, at the age of thirty-five, an action was brought against her by her third husband accusing her with being affected with some disease of the sexual parts that rendered the performance of the connubial act on his part extremely difficult. After some difference of opinion between the medical men to whose professional examination the wife was submitted, it was at last considered that she was in reality a male, and the case came under the investigation of the members of the Royal Medical College of Silesia, who confirmed this opinion. The imperforate penis was an inch and a half long, the perineal fissure forming the false vagina was, at the posterior part of its orifice, bounded by a distinct frænulum, but was of a size sufficient to receive the glans of the husband for an inch and a half in depth. At the bottom of the fissure could be seen the orifice of the urethra with the ducts of Cowper's glands opening on its surface. The right half of the scrotum contained a small testicle, while the left lay external to the abdominal ring, and both were furnished with spermatic cords."†

It was the absence of these bodies or the prostate, at all events the impossibility of ascertaining their presence, in the case of Ann C., which caused a doubt in the minds of myself

* Cyclopædia of Anat. and Physiol. Vol. ii., p. 684.

† Ibid, Vol. ii., p. 693.

and of my medical friends who saw it, as to which sex the subject of it really belonged.

The external organs of generation were so confused as to represent partly those of the male and partly those of the female—the tastes, habits and propensities, were those of the female,—while the physical conformation partook both of the male and of the female characters. Had there been any menstrual discharge from the opening in the perineum or from the rectum, as has happened in other cases, this would have been presumptive evidence that the person was a female. But there was none, and the periodical molimina, which she asserted she had, was probably more fanciful than real, and might be accounted for on the simple theory of expectancy, considering that she had been brought up from birth as a female and had always associated with that sex.

In the absence then of any positive knowledge as to the presence of uterus, ovaries, prostate or testes, it would be as injudicious as it would be impossible, during life time, to give a decided opinion as to which sex this person actually belonged. Many examples of mistakes having been committed with regard to the sex of supposed hermaphrodites, of the hypospodiac forms are recorded, and instances have occurred where parties, pronounced by competent medical men to belong to one sex while alive, have proved on examination after death to belong to the opposite sex. On this point Simpson remarks that "sometimes it is found extremely difficult or even impossible during life to determine with precision the true or predominant sex of the malformed individual; and in regard to several well known cases on record, we find on this point the most discrepant opinions offered by different authors. Thus, while Morand, Arnaud and Delius described Michel Ann Drouart as a male; Guyot, Ferrein and Caldani maintained that the person was a female, and Mertrud regarded the individual as an example of a real hermaphrodite. A useful lesson of caution to us against forming too decided and dogmatic an opinion in cases in which the sexual conformation appears in any marked degree doubtful, has lately been offered in the instance of Maria Dorothée Duriée, or as this individual was named in the later years of his life Charles Durge. While Metzger considered this person as a specimen of that kind of equivocal sexual formation, to which the designation of hermaphroditism is truly applicable; Hufeland, Mursinna, Gall, Brookes and others, declared the sex of Duriée to be in reality female; and

Stark, Mertens and the members of the Faculty of Medicine at Paris were equally positive in regarding the individual as merely a malformed male."* On examination after death there were found both male and female organs.

In Ann C.'s case, there may exist within her, for anything we know at present to the contrary, the organs characteristic of either the male or the female sex, or there may, as in the example of Duriée, be a mixture of both male and female organs. Ann C.'s tastes, habits and inclinations, taken in connexion with the apparent erotic excitement which was induced by the mere touch of the orifice in the perineum, would, if considered of any value, lead to the suspicion, that there may exist internally some organ characteristic of the sex she was desirous to establish. But most authorities are inclined to attribute little weight to the sexual desires of individuals, some of them having actually lived in the capacity of wives, who after death were found to be in reality males.

Had Ann C. married as she seemed so very anxious to be, the malformed condition of the genital organs would have formed sufficient ground for an action to render it legally null and void. Coition with a male, would, I think, have been quite possible, though it would have been for both parties difficult and probably painful. The opening between the two labia in the perineum, which led to the bladder might readily, by an unprofessional man, be mistaken for the vagina, and as it was sufficiently large to admit the forefinger easily, it might in time have become capacious enough to admit the penis. Again, I believe, it would have been possible for this person, with a penis, or organ representing it, so large and so capable of erection, to have had sexual congress with a female, though owing to the imperforate state of the organ, there could be no emission.

I have searched through all available sources for a case similar to the one which has formed the subject of this paper, but have not been able to find one exactly the same. The only one at all similar is noticed in the third volume of the Cyclopædia of Medicine,† and is related by Marc. This individual, named Marie, had passed for a female for many years, had two offers of marriage which were refused by the parents as unsuitable for their daughter. It was only when

* Obstetric Memoirs, Vol. ii., p. 237.

† Article, Doubtful Sex.—p. 729.

a third and a suitable one aspired to her hand, that the parents, who much desired the match, knowing that their daughter? was not formed as other women, and that she had never menstruated, determined, previous to the marriage, to have her examined. This was done by medical men, who to the surprise of all declared Marie to be a man. "She (or he) shed tears at this announcement, andwas for some months before she could be reconciled to the idea of not being a woman. At last *he* took the resolution of petitioning the authorities to alter the register, and declare him of the male sex. A commission was accordingly appointed consisting of three medical men, who reported that on examination they found the scrotum divided through its whole extent, each division containing a rounded body, which they recognised as the testicles. Between these parts a fleshy prolongation was observed, having a cleft at its extremity but imperforate, covered by a process of skin which was in reality the prepuce.

"The penis was but little developed, and beneath it, at about an inch and a half from the margin of the anus, an opening was discovered, caused by the abrupt termination of the urethra in the perineum."

In contrast with this case I may be permitted to give one of spurious hermaphroditism in the female, in which it will be observed the appearance of the malformed organs was almost the same as in the case of Ann C., and in which the fact of one physiological function (menstruation) being regularly performed was held sufficient to distinguish the sex. The individual (referred to by Arnaud) was thirty five years of age, and had always passed as a female. The clitoris or penis was fully two inches long, with a glans which was imperforate, but depressed at its point.

In the perineum there was an orifice which led to the bladder, and occupied the same situation as the urethra does naturally in the female. On each side of this orifice were two bags representing exactly the labia externa of the female, each containing a small tumour which Arnaud supposed to be a testicle.

There was no vaginal opening, and the individual menstruated per anum. "At each menstrual period, a tumour always appeared in the perineum which gradually increased in size, and when it was as large as a small hen's egg, blood began to flow from the anus, although no hæmorrhoids or other disease of the rectum was present. Her conformation of

body was remarkable. Her skin was rough, thick and swarthy; she had a soft black beard on her face, her voice was coarse and masculine, her chest narrow; her mammæ were flat and small. The form in fact of the upper part of the body was masculine, but in the lower part the female conformation predominated." Professor Simpson referring to this remarkable case observes that, "if we do not go so far as to conceive the co-existence of some of the internal organs of both sexes, we must from the well ascertained fact of the menstrual evacuations, allow the person at least to have been a female. In that case we can only suppose the tumour in the labia to be the ovaries descended in that situation."

EXTRUSION OF THE BLADDER.

The present opportunity may be taken advantage of to record another remarkable instance of malformation which occurred to me some years ago, while resident Surgeon to a provincial hospital (Paisley) in Scotland, the particulars of which case I noted at the time.

The subject of this deformity, like some others similarly unfortunate, was an object of general curiosity, and travelled about from one place to another, for the purpose of obtaining a livelihood by showing himself to members of the medical profession.

This case may possibly therefore have been already published in some of the medical periodicals in Europe, but, so far as I know, it has not yet been recorded.

The following were the appearances presented by the case:—

1st.—The symphysis pubis was absent.

2nd.—There was no parietal covering to the abdomen from the pubic to the umbilical region.

3rd.—The anterior wall of the bladder was wanting, the interior surface of the posterior wall being exposed.

4th.—The urine was discharged by both ureters, visible to the naked eye.

5th.—The penis was very small, and in the usual position, with only an indication of urethra, manifested by slight pressure: there was also a prepuce on the under surface of the glans; on the upper surface there were distinctly visible the apertures of the seminal vessels, surrounded by numerous dark red spots.

6th.—The testes were perfectly developed, but the scrotum was imperfect.

7th.—All traces of an umbilicus wanting, but there was a protuberance just above the posterior wall of the bladder, supposed to be an umbilical rupture.

8th.—The penis is capable of erection, and the individual asserts his capacity for coition. He is married, but has no children, is forty years of age. Brothers perfect, has no sisters. Father and mother perfect.

He wears over his abdomen an apparatus composed of a metal shield to protect the inner surface of the posterior part of the bladder, and attached to the lower part of this shield is a metal reservoir into which the urine drops as it passes from the ureters.

This case is physiologically interesting. Fluids when taken internally by the mouth can be seen passing by the ureters, a few minutes afterwards, and this was easily tested by administering colored liquids. In my presence he swallowed the entire contents of a full quart bottle of Port wine, which were passed into his metal reservoir in the same coloured state, after the lapse of a few minutes, and, singular to say, this large quantity of wine did not seem to produce the slightest intoxicating, or even stimulant, effect upon him. Indeed, he informed me that he had on several occasions taken without any unpleasant effect two or three bottles of champagne in the course of less than an hour. He passed it all by the ureters very soon after he drank it.

This man (Carl Arburgh by name), though thus affected, was in the enjoyment of excellent health, he only suffered when subjected to injudicious scientific experiments by members of the profession. The poor fellow not being conveniently fit for any employment, was by necessity compelled to avail himself of his malformation as a kind of speculation and thus gain a livelihood.

NOTE.—We are in possession of a pamphlet of 25 quarto pages, admirably illustrated by colored lithographs, published at Christiania in 1857, in which the details are given of a very similar case, as regards the bladder, to that related by Dr. Mair in the foregoing paper. As we have no knowledge of the Swedish language, in which the book is written, we can say no more than that the patient was a female, and that the malformation, or arrest of development, of the inferior portion of the abdomen was much such as described by Dr. Mair; the mucous surface of the posterior wall of the bladder, with the orifices of the ureters, was exposed, and an omphocele also existed. In addition, the subject had congenital dislocation of both hips. If we are correct in our attempts at translation, the child was born on the 4th of February 1854 and died of cholera on the 20th of October 1855.

The title of the pamphlet is *Inversio Vesicæ Urinariæ og Luxationes Femorum Congenitæ has samme Individ, iagttagne af* LECKTOR VOSS. *Hermed 2de farvetryke Plancher. Universitets—Program for 2det Halvaar* 1856.—ED. *M.Q.J.*

NOTE BY MR. CHIPPERFIELD.—I have had the opportunity of perusing the foregoing paper by Dr. Mair, and I am permitted to add an account of a somewhat similar case which I had the advantage of watching, at short intervals for a period of fifteen months, when attending the Clinique of Mr. Simon at St. Thomas's Hospital. I regret that this account must be given from memory, as my notes were lost when I was leaving Moulmein.

The patient was a tall, delicate lad of fifteen years of age. The mucous surface of the posterior wall of the bladder formed the inferior portion of the abdominal parietes; the trigone was well marked, and the urine was constantly dribbling from the ureters, the orifices of which were valve-like and situated upon small papillæ. At the inferior portion of the exposed surface there was a small grooved body which Mr. Simon well described as "his marrow-spoon of a penis." This groove was the urethra, not closed above by the corpora cavernosa, and along it the urine coursed. I do not remember whether there was any scrotum, but the testes, small and soft, were in the inguinal canals.

Several appliances were put into requisition to endeavour to protect the exposed surface of the bladder, and to afford a reservoir for the urine; but none could be devised which could be considered in any degree perfect, and the youth was a nuisance to himself and to all around him on account of the ammoniacal urinous odour which he constantly carried about with him.

Mr. Simon therefore determined to attempt to relieve his condition. His deliberations resulted in the conviction that the only feasible plan of operation was to establish a fistulous communication between the ureters and rectum; then, to close the external orifices of the ureters; and, finally, to raise flaps of integument and unite them in front of the exposed posterior wall of the bladder.

This well designed operation, Mr. Simon proceeded to carry out in the following manner. A conical-pointed, slightly curved catheter, capable of being passed along the ureter, was selected, and an orifice was drilled in its conical extremity. This catheter was then fitted with a stout stilette, pointed and eyed at the extremity so as to carry a moderately thick ligature thread. The instrument, thus prepared, was then introduced into the ureter and carried onwards, towards the situation where the duct curves along the side of the rectum, until its point was felt, pressing against the wall of the bowel, by a finger previously introduced per anum. The stilette was next pushed through the coats of the bowel, the loop of the thread seized, drawn downwards, and caused to appear at the anus. The catheter and stilette were then withdrawn and the two ends of the thread, hanging from the external opening of the ureter, were, for safety, secured to the loop. Only one ureter was operated upon on the first occasion. The seton was moved daily so as to set up suppuration in its track through the coats of the bowel, and it was allowed to remain until evidence of the establishment of the fistula was afforded by the passage of urine per anum. It was then withdrawn, and for sometime there were great hopes of success, for no urine flowed through the vesical orifice of the ureter operated on; the fluid secreted by the corresponding kidney collected in the rectum and was passed as distension occurred. But just as it was purposed to operate on the opposite side the urine again appeared at the vesical orifice and ceased to be passed per anum.

Nothing daunted, Mr. Simon operated on the other side, and again opened up the first fistula; and after some trouble, and having to vary his expedients somewhat, from time to time, the perseverance of the surgeon was rewarded by having permanent uretero-rectal fistulæ established. This happy result was expedited probably by the second step of the operative proceeding. This consisted of removing the mucous coat of the ureters for about the length of

three-fourths of an inch, and bringing the pared edges into close contact and securing them with hair lip pins. If my memory serves me this procedure had also to be repeated before it was crowned with success.

The lad was now comparatively happy; he was no longer annoyed with constant dribbling of urine, the ammoniacal odour was gone, and he amused himself in the hospital grounds.

The completion of the operation, by giving a tegumentary covering to the exposed wall of the bladder, was then talked of, but before it could be performed the poor patient fell into bad health. One day he was seized with rigors, vomiting and severe lumbar pain, and it was evident he was passing renal calculi. Careful examination of his evacuations showed such to be the case, but at last it became manifest that there were calculi, in his ureters, too large to pass through the fistulæ. Unsuccessful attempts were made to ensure their passage; and all kinds of constitutional means were employed to endeavour to effect their solution and to correct the diathesis under which he laboured; but all in vain. His sufferings became intense, and at last the poor lad died.

Upon a post-mortem examination, one ureter was found blocked up with calculi, and there were some present in the other; but, although it was not occluded by these, the irritation they had set up had extended to the kidney and suppuration had taken place in that organ.

I think I am correct in saying that the calculi were composed of uric acid and urates, and that Mr. Simon attributed their formation to an hereditary gouty habit of body. In the absence of my notes I cannot be sure of this.

MADRAS, *7th June*, 1862.

ART. IV.—*Remarks on Osteosarcoma, with Illustrative Cases.* By Native Surgeon MOODEEN SHERIFF, Triplicane, Madras.

OSTEOSARCOMA.

CASE I.—Seevagunga, Æt. 30.

A THIN, short, weakly looking Malabar woman presented herself at the Chintadrepettah Dispensary, while Dr. Porteous was in temporary charge of it as acting Garrison Surgeon, for Medical advice, suffering from a tumorous enlargement of the right side of the inferior maxilla. There being no accommodation for in-door patients in that Institution, and knowing at a glance the disease to be of such a nature as to have no other alternative for its cure but removal by knife, Dr. Porteous brought her at once to his own Hospital of Triplicane Dispensary about the beginning of September last; where she was kept till improved in her condition, and persuaded to undergo an operation, which was performed on the 23rd October 1861.

Present State.—The tumor is hard, smooth and regular in outline, of an oval or rather oblong shape, and extending from symphysis to the angle of the bone. The en-

largement closely surrounds the bone, and bulges out more internally towards the mouth, which is not only felt by a finger, but also indicated from an impediment it offers to deglutition and speech. The right side of the jaw is about two inches longer than the opposite one, and the tumor in its broadest part externally, measures about three and a half inches. The whole of the teeth in the affected portion of the bone are dislodged, with the exception of a few, which are also loose and crooked; and the tongue, with the right sublingual gland and other soft parts, is pushed upwards and on the left side in such a manner, that her mouth remains always half open. There is no actual pain, but what she complains of amounts to a kind of uneasiness and discomfort from the size of the morbid growth, which, together with the impediment of deglutition and speech, renders her rather distressful. There is nothing like cachexia in its true meaning, but if anything, she has an anæmic and anxious look about her face.

Previous history.—States that she is a native of Conjeeveram, and is residing at Chintadrepettah of Madras with her husband for many years back, and that she has been generally a healthy woman, not having any recollection of her being laid up with serious ailment at any time. Her uterine function has been very regular, and continues so up to the present time. She is a mother of three children, the last of whom was born about three years ago. The tumor is of about five years standing, at the beginning of which period it made its appearance in the shape of a round swelling, and was stationary without any obvious alteration in its growth for three years. Two years ago it began to grow and became painful, and she had therefore been treated with leeches and various native applications with temporary relief to the pain, but the enlargement was more and more apparent after this, till it acquired the size described above.

As the case was one from which a most favorable issue was likely to result from its excision, Dr. Porteous operated in the following manner, assisted by Dr. Cornish, Dr. Ogg and myself.

Operation.—The patient was placed on a table in a semi-recumbent position, the head and shoulders being elevated and supported by pillows. Under the influence of chloroform, two incisors of the left half of the maxilla were ex-

tracted, a ligature was passed through the tip of her tongue, and an incision made along the base, from about an inch beyond the symphysis on the sound side, to the site of the facial artery or anterior inferior angle of the masseter muscle on the right, without dividing the artery. The upper and lower flaps were successively separated from the tumor from before backwards, as far as the limit of the incision.

While dissecting the upper flap, two of the small arteries bled rather freely, one of which was the mental or the termination of the inferior dental, passing out through the mental foramen, and the other, probably, the inferior labial branch of the facial, as it was seen bleeding about the origin of the depressor anguli oris muscle: the former was stopped by mere pressure, for a while, with a finger of one of the assistants, but in the case of the latter, it was necessary to secure it, for the time, to facilitate the operation by avoiding too many hands in the way of dissection on account of pressing the arteries. During the dissection of the lower one, two small osseous cysts or cells were cut open, and discharged a small quantity of glairy yellowish fluid.

Dr. P. having now passed his finger in the mouth, and around the tumor, satisfied himself as to its extent, and extended the incision to the angle and a little beyond it upwards; when, the facial, or external maxillary, or labial, artery (as it is sometimes called by these names) was divided and immediately secured, and the dissection of the flaps rapidly proceeded with and completed. The jaw was sawn to its greater thickness, perpendicularly, about half an inch beyond its middle on the left side with a large saw, and the remaining thin portion of the bone was cut through, by a curved cutting forceps. The saw used in this case, was the dovetail saw of Fergusson, and as recommended by that eminent author was found to be more manageable and effective than that of Hey. I believe Dr. P. had used it with the same result in two other such cases that he operated on some years ago. As soon as the bone was divided in the above manner, Dr. P. laid hold of it, passed a narrow scalpel through the cut edges behind the tumor, and divided all the soft parts attached to its inner side, from before backwards. The bone was finally cut through at once by a very large straight bone forceps without the assistance of any saw, in a spot, between the angle, and the inferior dental foramen; when, the hæmorrhage from the inferior dental artery was pretty profuse and as it was one of my nominated duties in

the operation to secure arteries, I was quite at a loss, how to apply a ligature in this case, where the artery was embedded in bony structure. However, on being told by Dr. P. to look out for a bamboo stick, I immediately made out his intention and gave him a small piece of it cut out in the shape of a nail, with which the artery was most effectively plugged. The cut surface of the bone was made smooth by cutting away a few spiculæ with a wire-cutting forceps, three dossils of wet lint were applied over the soft parts inside of the mouth, and the edges of the flaps were brought into exact apposition by nine twisted sutures with adhesive straps between their intervals, and some lint soaked in cold water applied over all with a fourtailed bandage. The ligature in the tongue was removed before closing up the wound. The integuments with other soft tissues, were although very adherent to the tumor, yet the dissection was so carefully managed by keeping the edge of the knife close to the bone, there was no trace of any breach on its surface; and that the incision itself was so clean and regular that it was hardly visible, when its edges were brought together by sutures. The soft parts that were cut through by the incision, commencing from where it was begun first, were, besides the integuments, &c., the

Levator labii inferioris,
Depressor labii inferioris,
Depressor anguli oris,
Platysma myoides, and
Buccinator muscles, with

a portion of the superficial layer of the masseter; and those that were dissected off from the inner surface of the bone, also commencing from before backwards, were the following muscles and ligaments,

Genio-hyo-glossus,
Genio-hyoideus,
Mylo-hyoideus,
Digastricus,
Pterygo maxillary ligament,
Superior constrictor (its origin from the malar ridge),
Stylo-maxillary ligament, and

a portion of the internal pterygoid. The ducts of two salivary glands, sub-maxillary and sub-lingual, were divided, and these organs themselves were quite exposed to their greater extent, from the division of the mucous membrane

and separation of the bone. The Stenon's duct was left quite entire, and as the external incision was not carried on much above the angle, the transverse facial artery was not divided. The condyle, coronoid process, and a greater portion of the ramus were also left intact, and with them the muscles, &c. attached to their surfaces, viz. : the whole deep, and a small portion of the superficial layer of the masseter, externally ; and temporal, external pterygoid, a portion of the internal pterygoid and buccinator, and ligaments of the joint, internally.

The ramus, from its containing little or no diploe in its centre, is the hardest portion of the inferior maxillary bone, and is consequently spoken of by Professor Fergusson and other authors as one offering more difficulty while effecting its division by saw and cutting forceps than any other part, but here it was cut through easily by a bone nipper alone, and this was not certainly owing to any extension of the disease, for the cut surfaces were found to be quite sound in their structure, but chiefly to the very large size of the instrument employed. It is the largest of the kind I have ever seen, and has also been used with greatest facility in snipping off the metarcarpal and metatarsal bones, and phalanges of fingers and toes in many cases by Dr. Porteous and in some by myself.

I shall speak of the effects of chloroform during the operation in my remarks.

Structure of the Tumor.—As the tumor removed in this case was intended to be sent to the College Museum, I did not examine it by section, but penetrated my finger easily in three places, and found out, as much as possible, what it was made of. It was oblong in shape, of about the size of a fist, and greyish white in colour. It appeared to have originated in the centre of the horizontal portion of the bone, which was expanded into a thin paper-like shell, and divided into numerous interstices or partitions, by similar osseous laminæ or spiculæ, and these partitions were filled with a kind of substance, partly brittle, friable, and resembling cheese in color ; and partly tough, and semi-cartilaginous in consistence. There were three small and thin bony cysts on the surface of the tumor, containing yellowish glairy fluid, two of which were broken during the dissection of the tumor, and the third when I passed my finger in it.

After-treatment.—The patient was for about half an hour after the operation very dull, faintish, unable to swallow the little brandy and water given to her, and her pulse was very feeble and 120 in number. One hour afterwards she complained of thirst, and drank with difficulty some brandy and water, poured on her tongue in small quantities, about half a China spoonful at a time.

Vesp. Complains by signs of pains in the wound; skin dry and warm, and pulse 140, but more developed. Has taken some milk, and broth. She was made to lie or turn her head well on the left side whenever she took any liquid, to prevent its passage from the wound.

℞. Ex. Opii. gr. iss.
in a pill at bed time.

24*th.*—Has had a better night than expected, having slept soundly for the most part of it. Looks more animated, and can talk a few words in a low and altered voice. There is not a drop of discharge in any place in the course of the incision. The pieces of lint inside of the mouth were dirty and stinking, being soaked in, and covered with, the nourishment she took, and were stuck to the cut surfaces of the parts. Two of these were removed by Dr. Porteous, with very great pain to the patient. The third dossil was so firmly stuck to the cheek, that it was unsafe to remove it with the force it required.

To have soup, milk, and congee for diet.

25*th.*—Slept well last night, appears lively and moves about in the ward. The remaining piece of lint was removed this morning, and the wound internally was nicely and very effectively cleaned by Dr. Porteous by repeatedly syringing it with warm water with a large glass syringe.

26*th.*—The sutures were removed this morning, and the wound was found to be perfectly united to its whole length by the first intention.

The mouth was daily syringed out in the above manner, till the cut surface of the bone and soft parts, was healed by granulation, the bamboo plug came away about the end of October, and the ligature of the artery on the 20th November, and about 4 days after this the patient was discharged well, to use Syme's expression, "with wonderfully little deformity."

It is now about 7 months since the operation was performed, and the patient has been perfectly healthy during this period.

Case II.—Davaneeamah, Æt. 25.

10*th November*, 1858.—A thin, pale, and cachectic looking woman of ordinary stature admitted this morning into the hospital attached to Triplicane Dispensary, with a large irregular enlargement of the right leg, extending from the knee joint to the lower third of the tibia, and measuring about twenty-two and a half inches in circumference in its thickest part. The leg is greatly disfigured, and its anterior aspect is very irregular, and presents several nodulated enlargements of different size, two of which are in a state of ulceration, and discharge a small quantity of thick matter with blood. The enlargement is soft and fluctuating in some places, and hard and slightly pitting on pressure in others, and the patient cannot bear the least pressure without great pain in any part from above the knee joint to the foot. The parts are also marked with several cicatrices of burns, and have their superficial veins much enlarged, particularly, in the lower third of the thigh. There is a distinct fluctation over the knee joint, which still admits of motion, but in a very limited degree. The patient cannot stand up, nor can she move her body in any direction without much pain, and she also complains of constant pain, even when the limb is at perfect rest, and consequently expresses her great anxiety and earnestness to get rid of it as soon as possible. The exact sketch of the limb is represented in Pl. III, fig. 1.

History.—The patient had been a pretty healthy woman, until within the last year, when, she, for the first time began to feel pain with some swelling just below the knee joint, for which she was treated by native doctors with applications of country remedies, actual cautery, &c., without benefit. The swelling continued to increase gradually till six months ago, when its progress became very rapid, and the limb soon attained the present size and condition.

14*th.*—The limb was amputated this morning by flap operation about the upper third of the thigh by Dr. Porteous, assisted by Dr. Paul and myself. The femoral artery with a few of its branches was ligatured, and the flaps were brought together by sutures, and straps.

The patient was ultimately recovered and discharged from the hospital in due course of time and has enjoyed a perfect immunity from all kinds of tumours for three and a half

Moodeen Sheriff's illustrations of Osteosarcoma.

Fig 1.

Fig. 2.

Fig. 3.

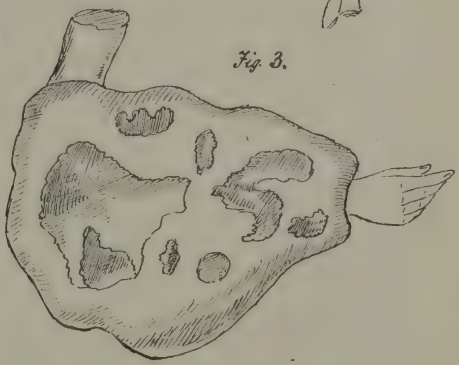
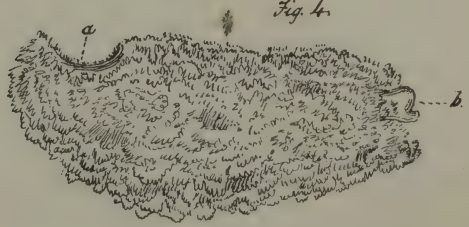


Fig. 4.



a. Greater sigmoid notch of Ulna.
b. Capitulum ulnæ.

years, which is the period now, since the removal of her leg.

The tumour, including the whole limb removed with it, weighed about 15 lbs., and the composition of its soft parts was partly sarcomatous, and partly medullary. The former resembled a pale muscle in its color and appearance, but felt harder when touched ; and the latter consisted of a kind of elastic or gelatinous substance like the medullary or rather cineritious portion of the brain, but much thinner in consistence. The soft parts having been removed, by macerating the limb for a long time in lime water, a skeleton (Pl. III, fig. 2) of light papery plates of bone, around the upper third of tibia and fibula, came into light, which appeared to have developed from their surface, beneath the periosteum. The bones appeared quite entire, there being no excavation or formation of a shell in any part, and their articulating surfaces were also quite free from any ossific deposition.

Case III.—Mooroogun, Æt. 16, a Malabar villager.

I am indebted to Dr. Cornish for his kindness in allowing me to take the following notes of this case from the official report of Dr. Porteous, for the year 1853, under whose practice it had occurred at Coimbatore. On the 13th November of the above year, this youth was brought to Dr. P. with an enormous tumor of the right arm, involving and surrounding the whole limb from the elbow to the wrist joint, and terminating at the latter point abruptly in such a manner, that the hand appeared to have been projected from the centre of a large distended bag, as shown in Pl. III, fig. 3.

About the middle of the arm, the circumference of the enlargement was 32 inches, and on handling, it felt to be hard and fibro-cartilaginous in some portions, and soft and fluctuating, as if from accumulation of some fluid, in others. The hand was nearly clasped and powerless, and when the upper arm was grasped, it seems to have imparted a distinct thrilling sensation to the hand of the holder, as if it was composed of rapid currents of fluid. The radial artery although much compressed, was still felt to pulsate at the wrist, its pulsation had exceeded 140, and was completely under the control of pressure over the subclavian. The history of the case is, that two years previous to his applying to Dr. Porteous, a small round swelling made its appearance

near the wrist, and remained stationary for four months without any pain or alteration in its growth. After this, it began to grow gradually for some months, and then very rapidly, with severe and frequent paroxysms of pain. About the latter course of the tumor, the veins were ruptured five times, losing on each occasion 3 or 4 ounces of blood and gave rise to ulceration on its outer side. His previous health had been very good, and he had assigned no cause for the disease.

On the 17th of the same month, the patient having been put under the influence of chloroform, Dr. Porteous amputated the arm about its middle by flap operation, with the assistance of one Dresser and Captain Jones, there being no other medical person available at the time. Four arteries were ligatured, but the arterial bleeding was on the whole very inconsiderable in comparison to venous hæmorrhage which was very great and uncontrolable for a short time. The stump was dressed in the usual manner, and the patient was discharged cured and much improved in condition on the 17th December.

After removal, the weight of the tumor was 20 lbs. and 8 ounces, and besides the bony deposition, it appears to have been composed of fibrous, cartilaginous, sarcomatous, and medullary structures, in various quantity, consistence, and color; and there were also a few cysts of sero-sanguineous fluid met with in its substance. Although some of the large superficial veins were ruptured and gave rise to ulceration, and the thin emaciated muscles expanded to the greatest possible degree, so as to cover the whole tumor; yet, none of these, nor any other original tissue with the exception of bones, were participated into degeneration. After macerating the tumor, a large, extremely porous and spongy, mass of osseous tissue was found to occupy the place of radius and ulna, which were completely involved, that no part of them was traceable in the least, except the greater sigmoid notch and capitulum ulnæ of the latter; the carpal bones were quite free from the disease, and so was also the lower end of the humerus. The Fig. in Pl. III, fig. 4, exhibits the appearance of this morbid specimen, now with Dr. Porteous, as near as possible.

The patient in this case was quite healthy for about two years after the operation, but nothing is known of him after that period.

REMARKS.

The term osteosarcoma, or its synonym osteosarcosis, appears to have been originally intended to signify, as it implies literally, "the change of a bone into a substance of the consistence of flesh," and the tumors to which it was generally applied, as far as their description goes, were carcinomatous. The disease has subsequently undergone a great change in its definition, being described by one party, as consisting of masses of true cartilage embedded in a fibro-membranous cellular structure, capable of developing itself in the centre of a bone or on its surface; and explained by another, to be a tumor composed of fleshy, medullary, or cartilaginous growth within a bone. Again, some describe it as a morbid growth, partly of bone and partly of fleshy substance of the non-malignant kind; whilst others apply it to all the solid tumors of bone, softer in consistence than the bone itself, and divide the disease into several varieties according to the nature of other tissues entering into its composition, as fibrous osteosarcoma, cartilaginous osteosarcoma, gelatinous osteosarcoma, cellular osteosarcoma, &c., all of which commonly occur in many surgical works under very different titles. In fact, this term has been used in a very arbitrary manner in a quite different sense by different authors, and has consequently created much confusion in distinguishing the true pathological condition of the osseous tumors to which it is applied.

To avoid such confusion, Professor Syme has divided the softer tumors of bone into fibro-cartilaginous and medullary sarcomatous; which is a most simple and useful division for all practical purposes. According to the description of these tumors given by the above author, it will be seen that the two first of the preceding cases afford a very good example of each of these varieties, case I being of the first kind, and case II of that of the second. Case III is, however, a third variety of mixed character, being both fibro-cartilaginous as well as medullary sarcomatous in its structure. As far as I can see, these three varieties appear to include with greater facility and in a more definite manner, all the tumors of bone that could correctly be designated osteosarcoma, and therefore if this term is to be retained at all by the profession, I presume its use will be attended with less confusion, were it to be made to comprehend these varieties alone: in this sense I have used it here.

Taking the above three cases collectively, we learn the following interesting points.

1. In all these cases the disease was idiopathic, being of spontaneous origin and not traceable to any injury to the affected bones. The history of almost all the recorded cases* of osteosarcoma also confirms this fact, although the opinion of some authors is against it.

2. Although the size and duration of each tumor was quite different in each case, but they all seem to have been alike so far in their progress, that they were slow, simple, and painless at the commencement, but rapid, complicated in structure, and painful in their latter course of the disease, especially after the rude surgical interference of native quacks.

3. In none of these cases the original tissues of the part, except the bones, were involved into diseased action, and particularly in case III the muscles, &c., were, although expanded to the last degree, yet, presented no trace of degeneration in their substance. This is one of the diagnostic marks of genuine osteosarcoma according to Professor Miller and some other authors.

4. In cases II and III, the tumors in some parts were so very soft and fluctuating, that it led to the belief of accumulation of some fluid, but this was found out on dissection to be owing to a thin elastic substance of the medullary kind; the existence of which seems to be of frequent occurrence in the advanced stage of the disease from degeneration, and exactly corresponds with the description of Professor Syme, who states that, "The tumor, though at first seldom so soft as when originating in the less dense tissue of the body, in its progress becomes softened and acquires, at least in some parts of its extent, a consistence so nearly approaching that of a fluid, as to render the discrimination from it extremely difficult."

5. In each of these cases the bones were quite as differently affected as occupied by the disease, and it may be inferred from this, that osteosarcoma can develope itself in

* Dr. T. Lowe's case in the "Madras Quarterly Journal of Medical Science," No. 1, page 174; Dr. Pirrie's case in the "Edinburgh Medical and Surgical Journal," page 163, July 1840; Mr. Spence's case in the "Edinburgh Monthly Journal of Medical Science," March 1854, page 217; Mr. Hetling's case in the "Edinburgh Medical and Surgical Journal," 1st July 1833, page 244; Liston's case quoted by Dr. Snow in his pamphlet "On the Inhalation of Æther," page 51; "Lancet," December 14th, 1855, page 609; and ditto, August 8th, 1857, page 141.

any and every part of a bone, and alter it in various shapes and consistence.

6. The morbid specimens in cases II and III prove that osteosarcoma does not confine itself to the bone in which it was first developed, but attacks others if they are near enough, as is the case with tibia and fibula, and radius and ulna; moreover, the condition of radius in the latter case was such, that it shows that the articular surfaces and cartilages are also occasionally involved in the disease.

7. In two of these instances (cases II and III) the disease was in such an aggravated state, that would lead one to suspect the existence of malignancy, and consequently deter its removal by knife; but in these as well as in the other, the patients have enjoyed an immunity from all morbid growths since the performance of operation and improved much in their condition; this is therefore an important point with regard to the prognosis of osteosarcoma, and encourages us to hope for a successful issue, in the words of Professor Miller, "even when the operation has been performed at an advanced age of both tumor and patient."

Of all these cases, case III is most interesting for the size of its tumor which weighed 20 lbs. and 8 ounces after its separation from the arm, and is therefore, in my opinion, the largest of the kind ever removed, at least, by any British Surgeon in Europe or India. The largest osteosarcoma that had occurred in Great Britain, was, I believe, under Syme, which was situated in the femur and weighed about 12 lbs., and I see another in the "Edinburgh Monthly Journal of Medical Science," March 1854, p. 217, among the recorded cases of Mr. Spence, which was found when removed to weigh 8 lbs. and a half; so, the one in our case (case III) is exactly equal to both these put together.

The peculiar current-like sensation imparted to the hand when the upper arm was grasped, and the repeated rupture of veins over the tumor in this case, may be looked upon more as accidental phenomena than symptoms of the disease, and they were certainly not depending upon any pathological peculiarity, but probably upon a mechanical disturbance of the affected parts, viz., interruption to free circulation, and consequent enlargement and distension of blood vessels.

The tumor in case II is also interesting for its large size, being second in this respect only to the one I have just described.

With regard to case I, it is very instructive for the successful manner in which the operation was performed in it, which I have already described at some length. I intend here only to offer a few remarks on the inconveniences experienced in this operation, under the heads of—1. Effects of Chloroform; 2. Arterial Hæmorrhage; and 3. Dressing of the wound.

1. *Effects of Chloroform.*—The patient was quite under the influence of chloroform when the operation was begun; during its course she showed slight symptoms of feeling by struggling and crying four or five times, on each of which occasions the insensibility was restored by the inhalation of a fresh dose; and, again, she was occasionally affected so much with the vapour that her breathing became noisy and stertorous, when the use of the medicine was immediately suspended. With all these, the effect of chloroform may be considered to have been good and complete in this case; for such interruptions are by no means unusual in all the operations of so difficult a nature, which generally require more time for dissection and separation of delicate parts than mere amputation of limbs. These circumstances may appear to some, as of trifling nature and unworthy of mention, but I can assure they are of great moment in point of practice, and if the operator is not already acquainted with their occasional occurrence, and the best way to manage them, he will certainly be quite at a loss at their first appearance to know what to do.

Struggling and crying, &c., are nothing but indications of insufficient chloroformization, requiring merely a little more use of chloroform to produce perfect insensibility if necessary; but stertorous or noisy breathing is a sign of its excess, and demands therefore our greater attention. As soon as it occurs we should not only withdraw the use of the medicine immediately, but watch the patient with greater care till it disappears. From the little experience I have had in the employment of this powerful and useful anesthetic agent, I am induced to attach a great weight to stertorous or noisy breathing, which is a most practical and sure sign of the approach of its dangerous effects, and the one that does not fail to attract the attention of the operator and others, by impressing upon the organs of hearing, even, when those of their vision and mind are deeply engaged in the operation. According to Dr. Snow's division of the effects of chloroform, it generally occurs in the 4th degree, but its occurrence

is not invariable for it is occasionally absent altogether when they are pushed, even to the very last, and this was exactly the case in a person died under the use of the medicine in my presence in the commissary bazaar of Bellary about the end of 1855. The patient in this case was a very strong and muscular Mussulman, about 45 years of age, and was operated upon for a cancerous tumor of the left mammary gland, which was rather diffused and deeply embedded in the substance of the pectoralis major muscle, consequently the time engaged in this operation was somewhat longer than usual, and before it was half completed the pulse became very weak at first, then intermittent, and finally ceased to be perceptible at the wrist. The respiration was apparently unaffected until within a few minutes of the death, which occurred about a quarter of an hour after the cessation of pulse and about 10 minutes after the operation. The patient was brought to sense as soon as the removal of the disease was accomplished, by the inhalation of Liqr. Ammoniæ, dashing of cold water, &c., and then, other measures were adopted to restore the function of the heart, but without any obvious benefit. He struggled much to be allowed to get up, but was kept down forcibly to prevent further syncope, which was already far advanced. The friends of the deceased did not allow the body to be dissected, and as there was nothing to lead to the suspicion of organic disease, the heart's action was not examined before the operation was commenced. The cause of death in this case is clearly and wholly attributable to the interruption and cessation of heart's action, and respiration was almost to the last unaffected.

Intermission of pulse is not so unfrequent in the use of chloroform as it would appear from its total omission in the systematic works on this subject, and I have observed it in another instance in Triplicane Dispensary. The subject of this case was a young, healthy-looking woman, who had a cystic tumor over her left eyebrow, and while Dr. Porteous was operating on her under the influence of chloroform, the pulse became intermittent, I was alarmed at its occurrence, as it put me in mind of the fatal case I have just detailed; and on informing the same to Dr. Porteous, he immediately put a stop to the inhalation, waited till the heart's action was regular again and the patient recovered her senses, and then removed the tumor without the assistance of anesthesia, and perhaps, therefore, without any bad result.

It will be observed from what I have stated of stertorous breathing and intermission of pulse, that, next to the nervous system, the heart and lungs are chiefly and mostly affected in the use of chloroform, and therefore it is as reasonable to expect as it is shown by experience, that whenever a case terminates fatally under its influence, it is from the interruption or cessation of the function of one of these organs, or possibly of both in some rare instances. But some persons take a quite different view of the subject, attributing the death in such cases wholly to the failing of respiratory movements, and deny the implication of cardiac action primarily on any occasion. Mr. Bickersteth appears to be one of these, and the conclusions he arrived at after some investigation in this very important subject, were published in Braithwaite's Retrospect, Vol. xxx, p. 429, a little before the unfortunate case had occurred at Bellary, and they were therefore relied on by some of those that were engaged in the operation, till its result had disapproved their correctness. The following are the conclusions alluded to.

1st.—"That in death from the inhalation of chloroform, the respiratory movements cease before the cardiac."

2nd.—"That the heart continues its action, uninfluenced by the chloroform, for a period longer or shorter after the cessation of respiration, and that its then failing may be considered as a natural consequence of the respiration having ceased, and as independent of the influence of chloroform."

3rd.—"That if, after the respiration has ceased, and while the heart is still in action, chloroform continues to be absorbed into the system, its movements may become impaired or cease—the chloroform in such case acting directly upon the heart."

Now, whatever the estimation of others may be of the signs or warnings of the approach of danger in the employment of the vapor, they are arranged as follows, in the order of their importance according to my own observation.

1.—Pulse, with reference to its intermission, and great feebleness.

2.—Stertorous or noisy breathing.

3.—Respiration, with regard to its irregularity, oppression, and great slowness.

4.—Dilatation of pupils.

5.—Dropping of the jaw.

With the exception of intermittent pulse, and irregular and oppressive respiration, none of the other symptoms are, necessarily and invariably, an indication of the approach of danger, but what I wish to express is, that their occurrence is a sure mark of the greatest degree to which the effects of chloroform can be safely carried on, and if unattended to, and the use of the medicine still continued, might lead to serious results.

I am conscious that I am not strictly confining myself to the observation of the case under our present consideration, but knowing from my own feelings that such practical hints as have already been alluded to indirectly, will be of some use, at least, to some of the junior practitioners like myself, and I may therefore be excused in this respect.

Adverting again to the case of Seevagunga, she was chloroformed by one drachm doses at the commencement, then by pouring by guess (as is generally the custom in practice) on a clean handkerchief, and the condition of the patient was judged by the effects, not by measurement, according to the advice of Dr. Simpson, the founder of chloroformization. The quantity consumed was ten drachms, and this is about the average amount expended in all the operations in adults, performed in this institution during the last 3½ years. The hospital chloroform was tried first, but it not having produced the desired effect in a reasonable limit of time, Dr. Porteous' own was made use of, and this is not the only instance of the bad quality of the drug supplied from public stores, for it has been found on some occasions to fail completely, even when it was pushed to a great extent. In one of the two cases of diseased mammary gland, removed by Dr. Duff about two years ago, during his short and temporary charge of the 4th District, ℥ iss. of hospital chloroform was quite unavailable for the purpose, it having produced more of vomiting and other inconveniences than anesthesia, and the operation was consequently delayed until his own was sent for from his quarters, and when this was arrived, about 3 iv. of it was quite sufficient to accomplish every thing required of it on the occasion. The dose and quantity of chloroform required for operations now a days, contrasts very widely when compared with those that I had observed to be in use in this very hospital, while a student under Dr. Cole about 14 years ago, when the medicine was newly introduced into practice. It was administered in 15 or 20

minim doses, and out of many operations performed, including amputations, &c., I do not recollect of a single instance in which the whole amount used was extended quite up to 3 iii. Dr. Cole's surgical cases, published subsequently by the late Medical Board, in the "Medical Reports" for the year 1850, will also corroborate the above statement.

2. *Arterial hæmorrhage.*—The manner in which the bleeding from the inferior dental artery was arrested, is the most instructive point in the above operation, and had it not been for this, it would have been necessary either to apply a ligature to the internal maxillary artery, or to resort to the use of the actual cautery as was done by Mr. Manford, on a similar occasion in one of his cases published in the "Edinburgh Medical and Surgical Journal," No. cxl, p. 138. The unnecessary severity of the two latter plans in comparison to the easiest and readiest manner of the first, is too plain to require any explanation. Although the operation was so conducted as to avoid the division of the facial artery till the dissection of the lower flap; yet, its branches were much enlarged, as often is the case, and the hæmorrhage from them was rather free, requiring the use of a ligature and pressure for its arrest. Will it not therefore be better in all such cases to cut the facial artery first and secure it when the incision is made, and then go on with the dissection of the flaps? I presume it will, not only from saving the occasional interruption to dissection by applying ligature and pressure to branches, but also from avoiding the securing of the main artery itself, which is generally divided in the midst of such operations, unless they are conducted with great care as in the above case.

3. *Dressing of the Wound.*—The application of lint inside of the mouth after such operations, appears both unnecessary and painful, as will be observed from the above case, and Dr. Porteous was unwilling, from his previous experience of a similar inconvenience, to use it for that purpose, but it was, however, applied at the suggestion of others. The plan of cleaning the internal wound, adopted by Dr. Porteous, by means of a large glass syringe was very effective, and is of great practical utility, in consequence of which the necessity of leaving the middle part of the external incision for a short distance unclosed for the discharge of pus, &c., as recommended by Liston, Druitt, and others, was dispensed with. In fact I prefer the former to the latter for two reasons; firstly, that the aperture

that gives exit to any discharge does not heal till the latter ceases altogether; and, secondly, that the wound that heals after a long exposure to the flow of pus, &c., generally gives rise to an ugly cicatrix, which will be very unsightly on a cheek, particularly among females, who are, according to my little experience, more subject to this disease in the lower jaw than males. I do not remember any author whose opinion confirms this statement directly, but it may be inferred indirectly from most of the cases alluded to in many of the surgical works generally in use being of this kind.* The subjects of the two previous cases of Dr. Porteous, already referred to elsewhere, were women, so was also a case of Dr. Cornish, operated on by him for a small osteosarcoma, and I have learnt in conversation from the former gentleman, my immediate superior, that he is of the same opinion on this point from his great experience of the disease.

Art. V.—*Notes upon Certain Surgical Applications, and upon Some Minor Points in Surgery.* By W. N. Chipperfield, Staff Assistant Surgeon, Madras.

ESCHAROTICS.

People will have their prejudices. Upon one occasion I was desired by a Hospital Surgeon, whilst "going his rounds," to remove a number of large external hæmorrhoids. Taking a stout pair of curved scissors, I rapidly effected the removal, and whilst I was keeping up a little pressure to arrest the hæmorrhage, which was smart, the Surgeon turned round and addressed the assembled class as follows:—"Gentlemen, you must not be influenced by anything you have just witnessed, but remember that *scissors are women's tools, not surgical instruments.*" Very shortly afterwards the same Surgeon, before several members of the class, used a fine pair of curved scissors in order to

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* Fergusson's Pract. Surgery, 2nd Ed., Figs. 242 and 243; Liston's Pract. Surgery, page 270; Lizar Pract. Surgery, Part II, Pl. xii; Edinburgh Med. and Surg. Journal, No. 39, 1st July 1833, page 244; Ditto, No. 63, 1st July 1839, page 137; Dr. Snow on "The Inhalation of Æther," page 51; and a reference is also made indirectly to one of Syme and Liston's case, in the same page of the first of the two Edin. Med. and Surg. Journals noted above.

divide the tendon of the internal rectus for the cure of strabismus!

People must have their prejudices. I have recently seen caustics described as "relics of barbarous surgery." I cannot assent to the correctness of such description, if we are to understand from it that the use of escharotics is, in no case, advisable or justifiable. It is true that, like scissors, caustics should not, generally speaking, be looked upon as substitutes for the knife; but there are certain circumstances in which, as it appears to me, a question might be raised as to which of the two might be most safely used, and in which I should not hesitate to select escharotics; and there are other cases in the treatment of which no doubt can possibly be entertained that the knife is inapplicable, whilst, at the same time, the destruction of diseased parts is clearly indicated.

I shall here make a few remarks upon some of the more ordinarily used caustics, founding my observations chiefly upon my own experience, rather than drawing upon the results of practice which have been communicated to us by others. It is not my intention to write a complete notice of escharotic substances—to show where they are admissible and where inadmissible, how they may be used and how abused—did I do this, these "notes" would not only assume the character of a compilation, but would also assume a far more pretentious character than I intend to impress upon them. I purpose simply to point out how certain substances capable of destroying the vitality of organised textures may, when judiciously used, become legitimate and highly useful additions to the *armamenta* of the Surgeon.

The actual Cautery.—Though formerly extensively used as an hæmostatic, the heated iron is now employed principally as a counter-irritant. I presume nearly every Surgeon has witnessed almost unhoped-for results from the stimulation of minute fistulous openings by a heated wire. I have several times observed the happiest effects follow this proceeding. After the separation of the superficial tubular eschar, firm granulations have sprung up and the occlusion of the fistula has resulted. In some instances this has taken place after every other mode of treatment—including paring the edges and bringing them together with sutures—has been tried and failed. Of course I am

not speaking of large fistulæ, but merely of minute fistulous tracts, such as we sometimes see in various parts of the cheeks, and in the anterior third of the urethra, when purulent collections have made their way through both mucous membrane and integument,—and in the perinæum after the stricture, which originally caused the fistulæ, has been successfully dilated.

But it is chiefly as a counter-irritant that the actual cautery is used, and this especially in chronic affections of the joints. Some Surgeons have a fancy for being provided with several instruments of particular shapes, but this appears to me to be a very unimportant matter. I generally prefer a button-shaped knob at the extremity of a stout iron wire or rod bent at a right angle about an inch from the button end, and fitted with a wooden handle. By the exercise of a little ingenuity almost any form of eschar may be made with such an instrument, especially if the circumferential margin of the button be made somewhat sharp.

I have mentioned that it is in chronic affections of the joints that the use of the actual cautery is of the greatest service. Of course the cases in which it is to be used must be selected. One would not apply it so long as any very acute inflammatory symptoms remain. But when heat and swelling have been reduced by appropriate treatment, then it is that the button cautery offers itself as one of the very best counter-irritants we possess. Again, one would scarcely think of its application in advanced scrophulous inflammations of joints where large papillæ and cloacæ have formed. But rejecting such cases and limiting the use of the cautery to those affections which are universally acknowledged to be properly treated by counter-irritants, it will be found as applicable to joints in which the articular cartilage is slowly undergoing the inflammatory process, as it is to those in which the synovial membranes alone or the tissues surrounding the joint are affected.

The iron should be well heated and the application of it should be rapid and slight so as to produce eschars of very little thickness. When these have separated, the raw surfaces may be dressed with savine, resin, or cantharidine ointment; or, what is better still and the practice I generally follow, the granulating surface may be touched again with the hot iron after an interval of a few days. The pursuit of this latter plan permits of the soothing application of warm or cold water dressing, and thus relieves the

patient of the pain and discomfort attending the constant application of irritating ointments. By a very little practice one is enabled to produce several degrees of counter-irritation by this simple means, from simple rubefaction, through vesication and thin eschars, down to deep issues.

In the days when Samuel Cooper taught Surgery, he was enabled to express himself as follows:—

"On the Continent, and also in the Surgical schools of Edinburgh, the cautery is sometimes recommended, as a means of producing counter-irritation, in the treatment of diseased joints; but in England, Surgeons rarely or never resort to it. Here we dislike heated irons as implements of Surgery, which may be looked upon, perhaps, as mere prejudice, because no doubt is entertained of their frequent efficacy."*

I cannot but think that English Surgeons are to be congratulated upon the fact that this prejudice against a means of treatment, of the frequent efficacy of which no doubt is entertained, is fast wearing away, if it has not entirely disappeared. That the aversion to the heated iron is being overcome, a slight reference to the more modern English works on Surgery will at once convince the reader.

The pain which the application causes is undoubtedly great at first—so great, when it is necessary to make eschars of considerable thickness, that it is simply humane to place the patient under the influence of chloroform; but the pain, especially when light effects only are required, soon subsides, and it is therefore infinitely less annoying to the sufferer than the "keeping open" of blistered surfaces, or than the irritation resulting from the inunction of tartar emetic ointment or croton-oil liniment. I must not be misunderstood here; I am not objecting to the last named applications, but simply seeking a place for the judicious use of the heated iron.

It is not a part of my purpose to give detailed cases. If it were so, I could mention several instances in which the cautery afforded the most satisfactory results, and others in which it gave more relief than any other treatment which had been pursued. In my list I should have to include thickening of the tissues around, with impaired motion of, the shoulder, elbow, knee, and ankle joints; incipient disease, and actual ulceration, of the cartilages of the radio-ulnar, ilio-femoral, carpal and tarsal joints; and,

* First Lines of Surgery, Art. Ulceration of Cartilages.

even, where the evidence was by no means doubtful of commencing caries in the tarsal bones. I am tempted, however, to mention one case which occurred in the practice of my friend Dr. Mudge, and recently came under my notice.

A young woman, about 16 years of age, suffered from sub-acute inflammation of the periosteum of both tibiæ. Whilst under treatment, chronic synovitis of one knee occurred. This was treated *secundem artem*, but no permanent benefit was derived; there was slight diminution of the effusion, but swelling, and thickening of the tissues around the joint, remained. A fusiform eschar about four inches long and half-an-inch wide at the centre, was then made on each side of the joint about one inch from the lateral margins of the patella. The eschars, which were tolerably thick, separated, and the raw surfaces were allowed to granulate and cicatrize; when healing was complete, the affection was cured and the joint perfect. Of course the large cicatrices remain and will always be plainly visible. Recently, periostitis has again appeared in the other leg, and, curiously enough, the knee has become affected in the same manner as the opposite one was previously. I believe it is intended to pursue a similar practice to that which before proved so successful.

Potassæ Hydras.—This is a very valuable escharotic. It is possible—nay, probable, that it has been misused. Had it not been so, most likely we should never have heard such outcries against it as have proceeded from some of our obstetric physicians. Far be it from me to impugn the statements of any of my professional brethren, but I cannot help thinking that prejudice against the use of the potential cautery has caused a certain amount of exaggeration in the details which some give us of its baneful effects. It must be borne in mind that its action is less capable of limitation upon mucous than upon tegumentary surfaces, simply on account of the greater juiciness of the former. But I can scarcely imagine the absolute correctness of assertions which I have read that the entire cervix uteri has been destroyed by this application. If such a result has happened, it does not prove to me that the remedy was ill-chosen, but rather that it was ill-applied.

I shall pass over the very obvious and common use of this escharotic as a means of producing an eschar for the purpose of establishing an issue; as well as its application

for the destruction of the hard, elevated edges of an indolent ulcer, or the surface of a foul or sloughy one; merely saying that I conceive that, in the latter case, not only does the hydrate produce a defined slough which subsequently separates leaving a granulating surface, but that it, in some manner, modifies the action of the part, so that the resulting ulcer necessarily takes on a healthy healing process.

I particularly wish to point out a use of this substance which, I believe, is not very general, viz., the destruction of unsightly puckered cicatrices, and the production of smooth, even ones in their stead.

Every individual who has had opportunity of seeing many persons affected with scrophula,—and unfortunately there are few who have not done so,—must have witnessed numerous instances of very ugly, irregular scars, chiefly about the neck, which have resulted from the healing of orifices, artificially or naturally produced, for the evacuation of softened tuberculous matter from glands, &c.; and these puckered cicatrices may happen even when the greatest care has been taken to prevent their occurrence. The destruction of these cicatrices is very readily performed with potassæ hydras. When the eschar, which should extend a line or two beyond the margin of the cicatrix, has separated, some care is required during the healing of the wound that the granulations be kept even. For this purpose I know nothing better than lightly touching the point of prominence, or if necessary the entire surface, with the same substance. When cicatrization is complete, there remains an even, uniform surface, level with the surrounding skin, at first of a reddish tint, but subsequently assuming a hue the same as, or a little lighter than, that of the neighbouring integument. In natives of India, the pigment is not deposited in these cicatrices at first, and sometimes, not for a long period; but I have known several cases in which, after the lapse of several months, the pigment deposition has taken place, and the cicatrix become scarcely visible.

I think it right here to acknowledge that I first became acquainted with this use of caustic potash, during the time I held the appointment of Resident Surgeon to the Margate Infirmary for Scrophula and allied Diseases. I succeeded my friend Mr. Cornish in this appointment, and I feel sure that his experience in this matter entirely coincides with my own. In fact, soon after my arrival at Margate, one

of the visiting Surgeons, in alluding to this subject, told me that "Mr. Cornish had become such an adept in the application of caustic potash, that he could unhesitatingly produce exactly the effect he desired from its use." It is true that this acquirement is not difficult to attain; a little practice is all that is required, and this practice the Margate Infirmary amply afforded. I have not seen the work on the treatment of Scrophula lately published by my friend Mr. P. C. Price, (of knee-joint excision celebrity), but I make no doubt that he, too, in his experience at a kindred institution to that I have mentioned, found an equally good result of the treatment here spoken of. The benefits of the practice were so well known in the neighbourhood, that, in my time, in the out-patient's room, there might daily be seen many persons, visitors either at Margate itself or at some of the marine towns in the vicinity, who presented themselves solely for the purpose of getting rid of the unsightly scars alluded to.

I am well aware that it may be said, these cicatrices may be much more rapidly and quite as effectually removed by the knife. I have seen this practice also followed, but I can safely say that the results are not to be compared with those which proceed from the treatment I have advocated.

But it is not simply for the removal of unsightly cicatrices that the potassæ hydras is of value. In the treatment of large deposits of tubercular matter in the lymphatic glands it is equally efficacious. There are many cases in which the tubercular deposition takes place to a considerable extent, and then remains stationary. Means to produce absorption—a questionable practice; or means to set up softening and suppuration, such as iodine painting, inunctions of various kinds, poultices, &c., may all prove unavailing; the indolence remains. Under such circumstances the following procedure has been attended with success.

Take a strong wire (a large sized knitting needle answers very well) and, with a file, sharpen one end to a point; commencing just above this point, file a spiral groove upwards along the wire for the distance of half an inch or more,—in fact, convert the extremity of the wire into a pointed male screw. By drawing the screw two or three times over a stick of the caustic, the groove becomes filled. The wire may then be thrust into the tumour so as to reach its centre, and immediately it should be *unscrewed* out

again. I say *unscrewed* out again; I mean, of course, that a rotation on its axis should be given to the wire, by the finger and thumb, in the direction which would be necessary in order to effect its withdrawal had it been screwed into a plank. The direction of this rotation necessarily depends upon the direction in which the spiral has been filed.

A small quantity of the escharotic will have been left in the substance of the tumour, and the point of entrance of the wire soon heals. In a few hours softening commences, and after the lapse of a few days it has proceeded so far and is attended with so much suppuration that the entire gland is filled with a diffluent material which may readily be evacuated. Should an incision be delayed, the point of entrance of the wire will ulcerate, and evacuation may thus slowly and tediously take place. But it will be found that this process had far better be expedited, and either this opening enlarged or another made in a more depending position. I believe I am correct in saying that this mode of procedure originated with Mr. Geo. Hoffman, one of the visiting Surgeons to the Margate Infirmary, a gentleman who unites in himself the qualities of a most observant physician, a skilful surgeon, an ingenious mechanic, an accomplished scholar, and a warm-hearted friend.

A plan similar to this may be followed even after an opening has formed, or been made, and a portion of the tubercular matter has been evacuated. There may remain, for a long time if not interfered with, a hard mass, and this may be caused to break down by thrusting the charged screw into it through the existing aperture. A little practice is required to know exactly how much of the escharotic to bring in contact with the contents of the gland. It is far better to repeat the application two or three times than to produce too violent effects at first.

There is another substance which is also very efficacious in causing the more rapid softening and disintegration of crude tubercular matter, viz., the iodide of starch. It is very readily prepared by adding a solution of iodine to arrowroot, stirring them well together, throwing on to a filter, and permitting the blueish black powder to dry in the air. It should be kept in a stoppered phial. A small portion may be taken in the groove of a director and introduced into the orifice existing in the affected gland. It speedily produces suppuration.

Some Surgeons frequently use potassæ hydras for opening abscesses. I have on many occasions seen this done with regard to buboes. It is a practice I never follow except in the case of superficial scrophulous abscesses, where the entire integument over the purulent collection is thin and highly congested and must necessarily undergo the ulcerative process whatever mode of evacuating the contents may be selected.

Zinci Chloridum.—A powerful destroyer of vascular tissue, but without effect upon the epidermis. It is almost invariably the active ingredient of cancer pastes. Its efficacy is so well known that it is quite unnecessary for me to enter into any details concerning it. I have the permission of my friend, Dr. Paul, to cite two cases which occurred in his practice, and which I had the opportunity of watching, as admirably illustrating the use of this escharotic.

A native woman, aged about 35 years, presented herself with an enormous indurated tumour occupying the upper half of the right mamma and extending upwards to the clavicle and point of the shoulder. It was impossible to come to any accurate conclusion as to the nature of this tumour, in consequence of its having undergone changes produced by a variety of native remedies. The base was broad, very hard, and very firmly attached; the integuments were puckered and adherent in places; an ulcer, with slightly indurated and everted edges, about three inches in diameter, existed over the more prominent part of the tumour, and this ulcer was said to have been produced by an acid (probably the Sulphuric) applied by a native practitioner. Taking into consideration the size and connections of the tumour itself, it was deemed unwise to attempt ablation by the knife. A paste, composed of one part of chloride of zinc and two parts of wheaten flour was prepared. This was flattened to about the third of an inch in thickness, pressed firmly within the ragged margin of the ulcer and bound down in this position by a compress and bandage. The patient declared that the pain of the application was not severe, was less, in fact, than that of the disease; and the paste was allowed to remain for about 48 hours. At the end of that time it was removed, and the greater part of the tumour was found to have been converted into a dry slough. When this separated, which it did but slowly, there was still some indurated portion remain-

ing at the upper part. A second application of the paste, in smaller quantity, was made, and subsequently some suspicious looking spots were touched with a stick of the chloride. The result was that the whole of the tumour was destroyed; healthy granulations sprang up; cicatrization ensued, and the parts perfectly healed; the only apparent deformity being an adherent, somewhat uneven and contracted cicatrix.

More recently an elderly woman presented herself with a tumour, having all the characters of epithelioma, extending over the right temple and implicating the upper lid of the right eye, from the tarsal margin of which it, in all probability, sprung. The paste above mentioned was applied to the entire surface of the tumour and kept on for about 24 hours; when removed the whole diseased growth was found to have been converted into a dry ashen-hued slough. This very slowly separated; indeed, so slow was the process that day by day it was necessary to hasten the separation by raising and cutting off the edges of the slough. When it had all come away it was observed that the disease had affected the deeper tissues, but it was satisfactory to find that the whole of it had been destroyed. The external table of the skull was exposed for the space of about three inches in diameter; the centre of this exposed portion, corresponding to the external angular process and temporal ridge of the frontal bone, was, for about the size of a rupee, eroded and partially destroyed. Dr. Paul satisfied himself that this was the result of the disease and not due to extension of action of the escharotic.*

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* I have submitted the above account of Dr. Paul's cases to that gentleman and he has favoured me with the following remarks.

"There is nothing to object to, certainly, in the form of statement and no inaccuracies that I observe.

"The first named patient died subsequently of dropsy, but *the breast was cicatrized.* The case now in hospital is certainly progressing satisfactorily at present, whatever it may do eventually; but were the disease to return, I should not hesitate to reapply the caustic to the lid, extracting the eyeball if necessary. The external angular process, and temporal ridge, I am quite sure, was eroded from disease and not from the caustic, from the circumstance that the rest of the bone which came away as a necrosis presented a totally different appearance, which most likely was due to the caustic destroying its periosteum; so why should the small portion of that necrosis present erosion unless there were other influences at work besides those in operation at other parts of the same necrosis? You may say, it was caused by a more violent action of the caustic at this part. Why should it be more violent over the temporal ridge than elsewhere, provided the temporal ridge

Gradually exfoliation took place, and then granulations, at first very pale and weak, but subsequently becoming more firm, spread over the whole surface. Cicatrization is now slowly advancing and in a short time the cure will be complete. There could not, in this instance, have been any question raised as to the propriety of the use of the escharotic. I think no one could have been found rash—or, shall I say, heroic, enough to have undertaken to remove this tumour by the knife.

I may just allude to the fact that I have tentatively employed the chloride of zinc, by introducing it into unbroken, crude tubercular matter remaining in lymphatic glands after the evacuation of softened portions. Small, confined, shreddy, dryish sloughs resulted and were extruded, but I have never observed that the effects were so satisfactory as those I have mentioned with regard to the use of the hydrate of potash.

Zinci Sulphas.—Some may doubt the correctness of the term escharotic as applied to this substance. But if the crystals are reduced to a fine powder and applied to the surface of an ulcer, it will be found that a decidedly caustic action is produced. So far as I know, Professor Simpson of Edinburg was the first to use this substance in this manner. I am not aware of its possessing any particular advantage over other escharotics which we possess. I have principally used it in onychia maligna, after separation of the nail, and for the repression of the fungoid granulations so apt to spring up at the margins and root of the nail after ordinary paronychia. It has been successful; but according to my experience, the pain of its application is very severe.

Argenti Nitras.—So universally in requisition that it forms as integral a part of the contents of a Surgeon's pocket-case, as an abscess lancet or a dressing-forceps. Who would be without his Lunar Caustic?

"Velut inter ignes
"Luna minores."

It is questionable whether the nitrate of silver is, in

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was otherwise in the same condition as the surrounding portion of the bone? The paste was neither thicker at this part nor longer applied, so that there is no help but to come to the conclusion that the external angular process and ridge were under different conditions from the surrounding osseous matter;—softened and disintegrated by disease."

I think it right to add that I had no intention, in the text, to intimate that Dr. Paul's opinion was otherwise than strictly correct.

reality, a caustic. It appears to be far more a modifier of action than a destroyer of tissue. True it does destroy just a thin pellicle of the tissue with which it comes immediately in contact; but it has no deeper destructive action. Let its application be as long continued and as severe as possible, all of destruction which is effected is that of the part upon which it immediately acts. No deep effect, no true eschar is produced. Apply it severely to the integument; the epidermis only is destroyed and a blister results. Rub it upon mucous membrane; the chlorides soon decompose it, and there is but a mere scale of slough produced. Thrust it into the follicular substance of an enlarged tonsil; you may be inclined, at first, to think that you have really made a hole, but if the slough which is thrown off be examined, it will be found to be scarcely of the thickness of tissue paper. Nay, one may, what is termed, destroy a chancre with it; and yet no escharotic effect results. It is simply the thinnest possible slice of the surface which is destroyed.

But what a wonderful modifying power it possesses over the action of the part! Exuberant granulations disappear under its touch; weak ones become stimulated; an angry, unhealthy ulcer takes the character of a kindly healing surface. If this modifying, rather than escharotic, property of the nitrate of silver were not tacitly recognised, surely it would never have come into such general use.

I do not intend to enter upon the uses of this substance. I introduce it here merely to mention certain menstrua which I have found specially convenient when it is desired to apply the nitrate in the form of solution. The first of these is Sulphuric Ether. A very strong solution cannot be made by means of this fluid, its solvent powers being limited. I generally prepare it by reducing one drachm of the nitrate to powder, placing it in a phial provided with a well fitting stopper, and pouring upon it about half an ounce of Ether; replenishing the bottle with fresh ether as loss of fluid by evaporation or use takes place. The advantages of this solution are that the ether readily removes any greasiness of the integument where it is required to be applied, and that a uniform thin pellicle of the nitrate is immediately brought into most intimate contact with the part. The disadvantage is that its application produces an uncomfortable, stinging pain; but this is very evanescent.

In the course of trials with other vehicles I experimented

with the Spiritus Etheris Nitrosus, which has all the advantages which the sulphuric ether possesses, with the additional one of being capable of dissolving a larger proportion of the nitrate; whilst, at the same time, there is no more pain produced by its application than if a simple aqueous solution were employed. I have used this nitric ether solution of nitrate of silver with good effects to mucous tubercles and warts of all kinds; to both the ulcers and the marginal tubercles of lupus exulcerans; also as an application in severe erythema and simple erysipelas; and, specially, to afford a protective covering, and modify the action, in chronic eczema. I have not hitherto used it in œdema uvulæ or glottidis, nor in chronic tonsilitis, but I should not hesitate to do so, did a case present itself in which I considered the nitrate of silver necessary.

There are certain other substances which have an action upon surfaces, which action can scarcely be said to be escharotic, but is rather modifying in its character. Some of these may just be alluded to.

Iodine.—Caustic solution of iodine is frequently spoken of. I think the term not quite correct. The effects of iodine applications are directly proportioned to the strength of solution employed,—taking into consideration, of course, the greater or less delicacy of the particular skin to which it is to be applied. There may be merely desquamation, or there may be actual vesication produced. For the latter effect the compound tincture of the Pharmacopœia is not strong enough. In fact, it is scarcely sufficiently powerful as a topical application under any circumstances. A common formula in use is one drachm of iodine to one ounce of rectified spirit. I prefer a saturated etherial solution, made by letting an ounce of sulphuric ether stand upon one drachm of iodine and two drachms of iodide of potassium, in a well stoppered bottle which may be occasionally shaken. The effects of such a solution are instantaneous. Three or four paintings made one upon the other, as soon as the previous ones have dried, almost inevitably produce a blister. A single application will scarcely do so, nor will vesication ordinarily occur if but one application is made daily for a considerable time.

Acidum Aceticum Fortius.—This is very useful as a vesicatory, and especially so for the purpose of destroying the microscopic parasitic fungi of skin diseases. I have

used it largely in porrigo scutulata, herpes circinatus,—indeed, in all the forms of herpes (except h. zoster in which the vesicles are large, and no topical application is required), and in pityriasis versicolor, and p. rubra so common on the inside of the thighs of sepoys. The action of the acid is decidedly vesicant. Applied once or twice a day for a period which must necessarily vary according to the severity and extent of the eruption, it very rarely fails to cure. Should the affected part be of large size, I think it prudent to attack only small portions at one time; and in all cases, more especially in those of a parasitic nature, the application should extend beyond the margin of the part affected. If, after a fair trial, the acid fails to cure, the subsequent application of a strong alcoholic solution of bichloride of mercury will be found effectual.

Creasote.—This is certainly not an escharotic, but I mention it here as a preventive of cell-growth. Its use in this respect was first suggested by Mr. Rainey, the microscopist, who, remarking its wonderful power of preventing the development of confervæ, fungi, &c., in preservative fluids used in the mounting of microscopical preparations, suggested to two of his colleagues, Dr. Bristowe and Mr. Ord, that it might prove of use surgically for repressing cell growth. Subsequently Mr. Rainey published a short account of some experiments that had been made with this fluid, with suggestions as to its more extensive use. This paper may be found on page 545 of the "Lancet," Vol. ii. 1855; and it contains the following remarks:—

"I have even recommended a professional friend of mine, who has at this time a case of epithelial cancer under his care, to make a trial of it in this disease.

"As this class of diseases, besides being distinguished by abnormal cell growth of greater or less activity, is also attended with a disordered condition of the system, the local application of creasote would not of itself be likely to be of much service. In such cases it would require to be taken also internally, and probably to be persisted in for many months, according to the effect it might have upon the local disease or upon the general health. I may observe that I am by no means sanguine as to the beneficial effects of the remedy I am proposing in those diseases which are known by the term malignant. My expectations upon this point are far from rising to an extravagant elevation. I merely think from what I have seen of its action that it is just worthy of a fair trial, especially as these diseases are at present incurable, and as the

remedy which I propose for their cure or relief, very different to many others employed for the same purpose, is incapable of doing any harm, should it fail to do any good."

I have tried the creasote, as recommended by Mr. Rainey, with perfect success, on "seedy warts" which had persisted in growing after removal by the knife and attempted destruction by acids. I must acknowledge that I do not think the creasote is more effectual or so rapid in its action as another method of treating warts of all kinds (except those of venereal origin) which I have for a long time followed; viz., dipping the pointed end of a probe into the acetum cantharidis, so as to let a drop collect about the point, and then drilling through the wart, in four or five places, so as just to reach the derma; this produces a blister which entirely removes the wart and it does not reform.

I resolved to try the creasote in some of the more formidable affections alluded to by Mr. Rainey, as opportunity offered. I have never yet met with a case of epithelioma so situated as to render it either prudent or convenient to exert such an amount of pressure as the application of creasote requires. But what I considered a favourable case for its use soon came under notice.

An elderly native woman applied for the relief of an ulcerated scirrhus tumour of the mamma. It was of small size, and was reported to have been of slow growth, but to have increased more rapidly within a short time of my seeing the patient. The woman was not suffering much in her general health, and as the case appeared a favorable one for operation, I proposed removal of the mamma, but she begged so hard for some previous treatment that I determined to try the creasote. A compress of lint was well impregnated with the drug and applied to the ulcerated surface, a firm pad and bandage being placed over all. She was directed to let this remain undisturbed for three days, and at the end of that period to present herself again. At the same time she was desired to take a pill containing one drop of creasote three times a day. She took the remedy, the dose of which was gradually doubled, and the dressings were renewed every third or fourth day. At the end of three weeks' treatment, my regiment was ordered on Service and I then lost sight of the old woman. On the occasion of my last seeing her I found the tumour had certainly not increased in size; in fact, I thought it slightly diminished, but could not satisfy myself that the diminution was actual, or

more referrible to the creasote than to the firm pressure which had been exerted upon the part.

Subsequently a very similar case, in a much younger woman, came under notice, and the patient's horror of the knife again prompted me to resort to the creasote treatment. This was assiduously carried out for about three months, at the end of which time all I could say was that the tumour had not increased in size. Again I urged the necessity of operation, and as the poor woman had heard of the perfect immunity from pain which the inhalation of chloroform had afforded to an individual whose leg I had recently amputated, she consented, but her friends would not hear of the operation, and removed her from hospital.

I think Mr. Rainey is right in not permitting his expectations of the benefit to be derived from the creasote treatment in malignant disease, to rise to an extravagant height.

It is scarcely necessary for me to allude to the other uses of creasote. It is highly useful as an application in chronic cutaneous affections of a furfuraceous character, and will be found especially efficacious in *eczema impetiginoides*. Some practitioners prefer to apply it in the form of unguent; a very convenient and much more elegant application is formed by diluting the creasote by adding it to glycerine, with which it is readily miscible in all proportions.

METALLIC SUTURES.

Since the appearance of Dr. Marion Sims's essay, with the alliterative title of "Silver Sutures in Surgery," metallic threads have come into such general use for bringing the edges of wounds into close apposition, that those derived from the animal and vegetable kingdoms have almost fallen into disuse for this purpose, except by those who have hitherto been unable to provide themselves with the former. And we may fairly expect that, in due course of time, two or more of the four "regulation pattern" black reels of "silk, sewing, white, best stout," which now form an item among the contents of the capital instrument cases supplied to Medical Officers in India, will be substituted by an adequate number of coils of iron and silver wire.

Individuals may, perhaps, be found of such a conservative turn of mind, that they are suspicious and distrustful of any innovation; and such might argue that the hempen or silken threads which formerly answered the purpose of the Surgeon did so very well, and will continue to perform all that is

required now. But this would scarcely be fair. Every surgeon recognizes one disadvantage attending the use of sutures composed of organic material, viz., that, however desirable it may be to keep up apposition of parts by means of sutures, those of an organic nature must be removed after a short time, or ulceration will inevitably take place in their track and they will become loosened and thrown off.

Now I will not go so far as to say that ulceration never does take place in the track of a metallic suture, because I have seen a few instances in which it did occur. But it may safely be affirmed that, as a very general rule, there is no irritation set up by metallic sutures and that they may be left until the wound has entirely healed, without any ulceration occurring around them. Those who use these sutures must have had numerous opportunities of remarking the very great advantage which they possess, in this respect, over the non-metallic ones.

A curious instance occurred in my practice. I used iron wire sutures to close a wound after removal of a tumour from the back. When union was complete I directed the sutures to be removed, and the person to whom the removal was intrusted overlooked one of them. Three months afterwards the patient presented himself to show that he was quite cured, but just as he was leaving the room he remarked, "sometimes my skin feels irritable, and then, when I rub my back, I feel a sharp point like that of a pin where the wound was." Drawing my finger along the cicatrix I detected this sharp point and found that it was one extremity of a suture which had not been removed, the rest having, probably, become embedded in the few granulations which sprung up at some points before union was complete. I drew upon the wire so as to expose the twist, divided and removed the suture; and ascertained that, although it had been there for three months, no irritation, ulceration or suppuration had resulted from its presence.

When we remember how many Surgeons must have had opportunity of noticing the very little irritation, if any, that attends the circuitous course which needles take when they have been accidentally introduced into the body, we can but feel surprise that metallic sutures did not long ago come into surgical use.

Wire Seton in the Cure of Hydrocele.—The introduction of tents or setons into the cavity of the tunica vaginalis

was probably among the earliest expedients resorted to for the radical cure of hydrocele. Since the employment of the trocar and canula for the withdrawal of the fluid and the subsequent use of injections to excite the necessary degree of inflammation, the seton has, I think, deservedly fallen into disuse. Professor Simpson, however, about four years since, suggested the revival of the practice, substituting metallic setons for those of silk or flax, in the belief that the former merely excite adhesive, and not suppurative, inflammation. It has been stated above that suppurative inflammation very rarely follows the use of metallic *sutures*, but it by no means follows that it should not attend the employment of metallic *setons*, more especially under the peculiar circumstances attendant upon their use in hydrocele.

In the number of the "Edinburgh Medical Journal" for January 1862, there appeared a paper by Dr. J. D. Gillespie on *The Wire Seton in Hydrocele*, in which that gentleman shows, from ten reported cases, that very severe inflammatory action and profuse suppuration, and even sloughing, have sometimes followed the employment of the wire seton. This paper was read before the Medico-Chirurgical Society of Edinburgh and a discussion took place upon the subject. The report of that discussion I have not yet seen, but I observe, from an advertisement in the "Medical Times and Gazette" that it has a place in the "Edinburgh Medical Journal" for May. I mention this here because a case occurred to me, in 1860, which fully bears out Dr. Gillespie's assertions.

A respectable European applied for the cure of a large hydrocele of the left side, which had troubled him, more or less, for eighteen years. Fourteen years previously it was tapped and injected with diluted tincture of iodine, but a cure did not result for the serum again slowly accumulated. Seven years afterwards it had attained such a size that he again had it tapped and injected, the fluid used on this occasion also being diluted tincture of iodine. He thought for some time that he was cured, but to his great disappointment, found that such was not the case. At the time I saw him he was very anxious for a radical cure. By means of a curved needle I passed a seton, consisting of a single silver wire, leaving about two inches of it washed by the serum in the cavity of the tunica vaginalis. In 36 hours the pain became very acute, a smart fever occurred, and the scrotum became very hot, red and tense; the seton was therefore removed and a cold lotion applied. The

next morning he was in much the same state, and so he continued for five days when he further complained of being much annoyed by the ribald language and misconduct of some of the other patients in the ward, and expressed a wish to go home. He was removed in a palanquin, and on the next morning, I called at his house to see him. I found the parts still much inflamed and every appearance that suppuration would ensue. Poultices were ordered to be applied. Suppuration did occur, and subsequently incisions were required for the evacuation of pus and large shreds of slough. The mischief was confined to the scrotum and, fortunately, did not affect the tunica vaginalis. It is scarcely necessary to observe that constitutional treatment was not neglected.

The patient was about a month under treatment, and at the end of that time his scrotum was slightly scarred, but the hydrocele was apparently cured. Some months afterwards he stated that he was quite well, but I have seen him within the last few days and find that although the lower half of the cavity of the tunica vaginalis is obliterated, yet the disease is not completely cured. There is a collection of serum in the unobliterated part of the cavity and he purposes to have this operated upon. So anxious is he for a cure that he now regrets the wire was not retained longer, and is willing to have another seton inserted, should he be so advised. He probably does not fully remember his previous sufferings. I must own that this case caused me some anxiety, and I consider it a fortunate circumstance that the sloughing did not extend.

Dr. Gillespie remarks :—

"I trust I may not be mistaken as regards my hostility to the wire seton. I am fully impressed with the fact, that metallic wires are not likely to induce suppuration ; the principle of the operation is correct, so far as it goes ; but certain counteracting circumstances have been overlooked, which I believe have mainly tended to excite suppurative action, and which no skill on the part of the operator can prevent. When a seton of any kind is passed through a shut sac, of such an irritable nature as the tunica viginalis, and allowed to remain for hours, communication with atmospheric influences must result, and I believe that this is the true reason, quite independent of what the seton is constituted, which may give rise in some cases to suppuration.

"The puncture made by the trochar and canula soon heals, shuts up the cavity, and thereby explains, I should say, the comparative

immunity from suppuration, when injections are employed. If metallic substances are to be used for the cure of hydrocele, it therefore appears to me that a safer method would be, to draw off the fluid by the ordinary trochar and canula, and then insert through the puncture a probe, or some small metallic body. This in time might excite sufficient adhesive inflammation, and at all events be only half as likely as the seton to cause suppuration.* * *

"I merely throw out this suggestion for those who are dissatisfied with the treatment by iodine injection; for I shall conclude by stating, that I am myself perfectly well contented to abide by that long valued and, in my experience, sufficiently successful and safe operation."

I cordially agree with Dr. Gillespie in his perfect contentment with iodine injections in hydrocele; and although I am not among those who are deterred from putting in practice a method of cure, which bids fair to be useful, because of a few failures or because of some cases not having proceeded exactly as they were expected to do: preferring rather to accurately weigh all the advantages against the disadvantages, and to be guided by general rather than particular results: yet, we have so thoroughly efficient a means for the radical cure of hydrocele in these iodine injections (which originated with a Medical Officer in the Indian Service), that I cannot see the necessity of seeking a better, or, at all events, of resorting to one which has proved to be neither more effectual nor entirely free from danger.

It will be observed that Dr. Gillespie attributes the occurrence of suppuration to the admission of air. I think that in my case another cause came into play, and that the suppuration resulted chiefly from infiltration of the areolar tissue by the fluid of the hydrocele. To pass a single wire, or almost any wire seton, an orifice must be made with the needle larger than the wire will fill up. It may be said that the muscular structure of the dartos would cause the scrotal tissue to closely embrace the wire, and probably, to a certain extent, such would be the case; but it does not follow, notwithstanding the free presence of elastic tissue in serous membranes, that a similar result takes place upon an opening being made in the tunica vaginalis. I apprehend that, in the case above related, the wire did not perfectly plug the opening that was made and that the fluid trickled into the areolar tissue of the scrotum, and, instead of its being rapidly absorbed, as usually happens in such cases,—

either on account of its possessing some irritating property (for we know that the fluid, of old hydroceles especially, is not always a bland, innocuous serum), or from some unusual condition of the parts—the inflammation was excited which terminated in suppuration and partial sloughing.

(To be continued.)

Art. VI.—*On the Treatment of Acute Gonorrhœa as a purely Local Affection.* By Howard B. Montgomery, M.D., F.R.C.S.I., &c., Staff Assistant Surgeon H. M. Madras Army, &c., &c.

Without desiring to generalize on the causes of its being so, I may assume that this affection is one of frequent occurrence, and that it comes under our observation in every class of society, and often under circumstances especially demanding its speedy and effectual cure. It would be well indeed if we could with truth affirm that the latter could be effected with certainty. But experience has shown that few diseases are more obstinate in their persistance than this one if *not treated in time.*

My object in directing attention to it now is to investigate the nature of the disease and the rationale of its treatment as generally adopted: and to discuss briefly the two chief modes of cure advocated, namely, the *constitutional* and *local* administration of certain remedial agents.

If we desire a definition of the disease we must rely upon two series of signs, the one positive and the other diagnostic:—although between those two there are some intermediate grades which may, for want of proper attention, be confounded with either the one or the other erroneously. We must also candidly admit that in an affection of this kind we are compelled to rely more upon our own judgment than upon the statements of our patient.

The first preliminary enquiry upon which we are forced is as regards the positive signs of the disease, and they may be briefly summed up as follows:—

(1.) A specific inflammation of the urethra not dependent upon violence, or metastitis of inflammation.

(2.) The presence of a secretion of a *greenish yellow* discharge, accompanied by, or soon followed by, ardor urinæ, local swelling, frequent micturition, slight fever, and chordee.

(3.) Tenderness, or inflammation, of the prostate, testes, or bladder, following the setting up of urethritis.

(4.) Occasionally, a peculiarly chlorotic appearance, usually seen best in persons ordinarily of good complexion.

The differential diagnostic signs may be thus arranged, briefly.

From *Gleet:* by the history of the case, the intensity of the symptoms, and the general presence of fever, as also by the character of the discharge and the presence of *acute* inflammation.

From *Leucorrhœa:* by the character of the discharge which in this affection is usually of a *yellowish white* color, and thinner than that of true gonorrhœa; we are sometimes also assisted by the history of the case which in leucorrhœa admits connection, but without *probability* of the chance of infection.

From *Chancre in the Urethra:* by the irritable condition of the bladder, by the non-localization of pain in one spot, by the greenish hue of the discharge, by the absence of other syphilitic sores.

From all of the foregoing: by the presence of gonorrhœal rheumatism, ophthalmia, strangury or severe dysuria, by hæmorrhage following chordee, or by the various inflammations of surrounding parts before named.

From *urethritis* dependent on violence or the passage of a rough calculus: by the character of the discharge.

In the foregoing summary I have rather attempted to indicate, than to fully enter upon, the leading points of differential diagnosis between these several affections. My object has only been to verify the identification of the disease by negative as well as positive signs.

I purpose, in the present paper, to consider the advisability of confining our treatment of this affection to what may be esteemed as an almost purely *local* treatment, and to detail the results of this practice as I have experienced them.

In apology for dwelling upon these results I may be at once excused from any self laudation by the frank acknowledgment that the treatment I have for many years invari-

ably adopted is, in its origin, I believe, attributable to a French Surgeon, and that the only intention of these remarks is to explain to others a line of practice which in my hands has been extremely successful.

The symptoms of gonorrhœa do not need detailed review, they are sufficiently familiar to every practitioner; but I may here remark that in tropical climates I do not think that the same acuteness is visible in them as is witnessed in cold countries. The accuracy of this observation and the explanation of it are both verified by the difference that is to be observed in treating the same disease in England during winter and summer. My own experience would certainly go to prove that when the skin is freely acting, and when much fluid is taken into the system, the pain and discharge of gonorrhœa are both lessened.

But in this country and more especially in Burmah, where concubinage with native females is of frequent occurrence, I have witnessed a form of gonorrhœa which apparently, in each instance, originated from the sexual congress of persons of opposite races.

These cases were not those of leucorrhœa propagated and simulating gonorrhœa, but of a form of disease identical with gonorrhœa of a very mild form and yielding immediately to treatment. In pronouncing such cases as exemplifying the *development* of gonorrhœa, I may briefly state my reasons for believing in the accuracy of this opinion.

The discharge in gonorrhœa is, I think, *sui generis*. It is capable of staining linen and calico of a pale greenish yellow color not witnessed in any other disease, and this peculiar character equally belongs to gonorrhœal ophthalmia. Again, the local inflammations dependent upon gonorrhœa are much better marked than in any of the affections with which it may be confounded—and I have never seen a case in which uterine or vaginal leucorrhœal discharge (when productive of urethral disease *of a corresponding character* in the male) was followed by any similar amount of local irritation.

Two causes appear to me to favor the primary development of gonorrhœa in the male—congress with females of a foreign race—and connexion during, or immediately before or after, the catamenia. When these two causes co-exist the probability of disease is proportionately increased.

Of this probability I saw, in 1854, a good example.

(Case). Captain ———, consulted me regarding a suspicious discharge which had existed for 36 hours. He was found to be labouring under gonorrhœa accompanied by threatened cystitis. This officer had been for some months living with a Burmese mistress, and he concluded that she had been unfaithful to him. On his informing her of the nature of his disease, she denied that she had communicated it, and willingly submitted to examination. She was found perfectly free from any disease—but her catamenia had only ceased a few days. On enquiry it was found that connexion had occurred on the night of the day on which they ceased.

The gonorrhœa had appeared 72 hours afterwards. The natural inference would be that the patient contracted the disease from some other female, but this he entirely denied and for reasons that were perfectly satisfactory to my mind.

While in Burmah in 1853 and 1854 I saw two other cases of the same kind, and of the truth of the popular opinion that gonorrhœa may be thus originated, I do not entertain the slightest doubt.

It would be quite beyond my present purpose to instance, in full, cases of this kind—little good could result from such details, and they are only worthy of consideration if they enable us to draw any reliable conclusions as to the nature of the disease and the best method of curing it.

I may therefore summarize the conclusions at which I have arrived after the experience derived from the practice of a large hospital at home, and from observation of the disease on the Western Coast of India, in Burmah and Madras.

(1.) That specific gonorrhœa may be propagated by sexual intercourse.

(2.) That a dilated condition of the orifice of the urethra in the male renders its accession more probable than if a constricted state of the same part exists.

(3.) That a greater probability of infection occurs in persons who have within two years suffered from the same disease.

(4.) That gonorrhœa may be originated by intercourse with persons of a foreign race, if they are menstruating, or even suffering from acute leucorrhœa.

(5.) That gonorrhœa arising from the latter causes is of a mild character generally, but may be fully developed if not immediately checked.

(6.) That pseudo-gonorrhœal discharge may occur from these causes, or from accidental injury, among people of the same race.

(7.) That gonorrhœa, acute or chronic, may be cured by strictly local treatment.

(8.) That constitutional administration of Balsam Copaibæ, Cubebs, &c., is less efficacious and sometimes injurious.

(9.) That local treatment must be varied with the different phases of the disease.

Of the 1st and 2nd of these axioms I need say nothing, as they are familiar to every one. I would however briefly allude to the fact that gonorrhœa is not necessarily contagious,—or, to speak more accurately—that it does not of necessity follow impure intercourse; and the same remark applies equally to the other sources from which the disease may be *developed.*

The 3rd point is one worthy of attention: for, if general experience should affirm that, within certain limits, the tendency to contract this disease in the ordinary manner, (*i. e.*, by propagation of the specific poison) is greater in proportion to the more recent date of a previous attack, we should not only warn our patients to this effect, but should also endeavour to eradicate the disease as effectually as possible when we have to treat it.

That the lining membrane of the urethra is capable of degenerating—and of acquiring a proclivity to this specific disease—is I think sufficiently shown by the unhealthy condition into which it passes in gleet. This condition would seem to be identical with that of the intestinal mucous membrane in chronic diarrhœa, and especially in that form known as rectal diarrhœa which we can examine easily.

Viewing the pathology of the disease in this light the stages of it—the acute and chronic—would appear identical with the active and passive forms of inflammation, and so, no doubt, to a certain extent they are. But there is in gonorrhœa a certain specific poison (the effect of which is both constitutional and local) differing from urethritis proper.

This character is evidenced by the occasional occurrence of rheumatism, by the rapidity with which surrounding structures are involved, by the frequent co-existence (or sole development of) balanitis (external gonorrhœa), by the occurrence of phimosis, abscesses, prostatitis and cystitis—as not unusual occurrences, and by the singularly acute charac-

ter of the ophthalmia which gonorrhœal discharge is capable of exciting. A further proof of the special nature of gonorrhœa is that certain diatheses are known to be especially liable to attacks of gout supervening on the indication of *it*.

That gonorrhœal rheumatism is not a misnomer—or a merely accidental concurrence of two separate diseases is proved by the experience of almost all surgeons in large practice. Clive (the Elder) and Sir Astley Cooper both admit its frequent occurrence. The same remark applies to gonorrhœal ophthalmia as a constitutional occurrence. For, Sir Astley Cooper says, "whether it is by absorption of the poison or the constant irritation produced by the inflammation of the urethra, I do not know, but certain it is that gonorrhœa produces ophthalmia and rheumatism, and when not a single drop of the matter has been applied to the eye. The inflammation generally attacks both eyes and is of long duration."

Among the results of sympathetic inflammation of surrounding parts, the exudation of *plastic* lymph into the *corpus spongiosum*, is recognised as the most frequent cause of chordee. But that this is fully satisfactory is to be doubted. For, as observed by Professor Miller, chordee would sometimes appear to have some other proximate cause "than plastic lymph, normal and abnormal erections alternating with each other." The specific nature of the disease may perhaps account for the frequency of chordee as a consequence of it. Orchitis, another frequent result of the disease, would appear to be due to metastasis, rather than to propagation, of inflammation. It does not occur spontaneously, at a time when the disease is at the highest, but at a time when it is becoming chronic, it may be weeks after the first appearance of the discharge. And in this respect it is somewhat analogous to some other occurrences of metastatis of inflammation. Thus gout is sometimes diverted to the heart when the intensity of the attack on the knee or ankle is apparently subsiding.

The late date at which orchitis usually occurs must be expected only in cases where violence, or unusual exertion do not tend to develop it rapidly. And, that its spontaneous occurrence must be regarded as metastatic is indicated by the absolute cessation of urethral discharge on the supervention of orchitis.

A consideration of the foregoing remarks will draw us to the conclusion that gonorrhœa is essentially a specific

disease; that it bears some indistinct analogy to gout, that it is, like it, liable to be transferred to other parts of the body—especially those containing fibrous structures,—and that the discharge resulting from it may produce a special form of ophthalmia, whether the discharge be absorbed or directly applied to the conjunctiva.

Hence, accepting the implied inference, we are justified in believing that a certain period of time may be required to eliminate the specific poison from the system—and in assigning the period I have named, I have, necessarily, been obliged to generalize the apparent conclusions to be derived from the history of such cases as have come under my professional care.

In the 4th axiom, regarding the primary development of gonorrhœal disease from intercourse with females labouring under other than gonorrhœal affections, I am perhaps assuming a source of disease that may be doubtful. In regard to this I would only refer to the supposed origin of syphilis—and to the many points in which syphilis and gonorrhœa are *analogous*. I do not mean to imply that they are identical. But if the one be freely allowed to have arisen from indiscriminate sexual intercourse between Europeans and those of other nations, surely the production of an allied disease may be similarly allowed. It is within the experience of almost every one that in certain uterine and vaginal discharges there exists a considerable amount of acridity, and that these discharges are capable of producing a corresponding unhealthy condition of the urethra even in persons of the same race. The very knowledge of these facts seems to have been one of the reasons of several of the ritual and social enactments of the Jews. An enquiry into the habits, and laws, of other nations equally proves that a popular opinion on these points is prevalent even among savages. And in several of these the compulsory seclusion of females during the catamenia, &c., would seem to be intended to further the prevention of intercourse under such conditions.

It has also been observed that courtezans of the native class have been found to infect Europeans with disease, simulating gonorrhœa, although not themselves labouring under it.

Perhaps these cases may be explained by some natural proneness to disease of this kind, arising either from previous attacks of it or from constitutional tendency to it.

5th Axiom.—I have before remarked that some cases of this kind came under my notice some years back, and that I had no doubt that the disease was specific in its character and solely resulted from this impure intercourse named. In one case alluded to, neglect was followed by aggravation of the symptoms.

As regards the 6th axiom there can be very little doubt entertained, for examples of this form of disease are by no means uncommon. And here I may remark that the difference between these instances of disease and those alluded to under the last head, is simply this—that in the former case gonorrhœa *may* be produced, and in the latter it is usually of a character more apparently, than really, of this kind.

Abuse and excess may convert any disease into one of a more serious character, and undoubtedly excess, in the respect here alluded to, does very materially alter the character of secretions from the urethral and vaginal mucous membrane. Hence I would be fully prepared to admit the possibility of leucorrhœal discharge becoming aggravated into gonorrhœa—or that excessive indulgence might impart to the infecting power of the former disease the specific character of the latter.

The more usual consequence of intercourse specified under this class of cases appears to be the production of a discharge essentially chronic in its character and not specific. As to the likelihood of its being further spread by contagion I can give no opinion, but I would argue in favor of its probability from the knowledge that gleet may be rendered acute by excess—and that leucorrhœa from the female is analogous to it—and propagable.

And I have seen cases where a gleety discharge was for the first time set up by excessive indulgence in the privileges of married life. An instance of this kind I saw in 1860 in the case of a lady who consulted me as to the probability, or otherwise, of her being likely to become a mother. No such likelihood existed. But on her complaining of a constant whitish discharge, I found her suffering under leucorrhœa, which ceased almost immediately upon the use of mild astringent lotions—and on her temporary separation from her husband. In this case, not only was the occurrence of pregnancy prevented, but a very distressing condition was induced by the imprudence to which I have referred. The husband was made acquainted with my views on the matter, and the lady has since been happily delivered.

Again I have seen cases where a discharge of a similar character was produced, without any resemblance to gonorrhœa, in men who indulged to excess in a dissipated life. This form of disease, not unfrequently seen among sailors, is due no doubt simply to weakness, and it is generally amenable to very simple treatment; the cause of the disease being checked, its cure is rapid and effectual.

In some rare instances a gleety discharge is set up as an effect of some constitutional condition apparently entirely independent of sexual causes. These are generally cases of gouty or dyspeptic people. They invariably refer their complaint to some act of imprudence on their part, or misconduct on the part of those with whom they have had sexual relations;—I believe they often do so most erroneously.

There is of course considerable difficulty in accounting for these cases. But some of them have been brought to my notice in a manner that allowed me to judge of the existence or absence of any affection in the female, and in some instances it certainly did not exist.

I now pass to the consideration of cases of less doubtful origin. Within the last few months I was consulted by one who, having returned home after a lengthened absence, found himself affected, as he said, with gonorrhœa a week afterwards. He suspected from this that his wife had been unfaithful to him. But, *she had no disease whatever.* On enquiry I learnt that she was *unwell* at the time of his return, but when the catamenia had almost passed away, yielded to the solicitation of her husband. The result was the setting up of a discharge having all the characters of leuco-gonorrhœa. *He was cured in three days by simple astringent injections.*

In this case, and in almost all others of the same kind—as well as in pseudo-gonorrhœa arising from contact with leucorrhœal discharge—previous attacks of gonorrhœa were admitted. These however were too remote to admit of any belief that the attack was simply a renewal of an old affection.

But, to the tendency to recur, observed in this disease, I shall again refer.

I may here mention that I have seen some persons who exhibited a natural proneness to this disease, which is fortunately rare.

Several years ago I was acquainted with a gentleman, a student in Trinity College, Dublin, who solemnly assured me

that he had suffered from a discharge every time he had connection with a female, and he certainly gave tolerably good proof of his assertion by his frequent appearance as a patient. Under my notice, within one year he twice suffered from true gonorrhœa, and, more frequently than I would care to record, from fresh attacks of a gleety character. All these were the natural results of a very vicious mode of life and most promiscuous intercourse. Generally his affection was of a leucorrhœal character, and apparently non-contagious; this occurred very *frequently*.

A lengthened course of astringents to the urethra—and of occasional blisters to the perinæum, effectually removed this sensitive condition of the mucous lining of the urethra. Removal to the country and a more regular course of life effected a complete cure, and he has been long settled happily—is well married, and has children.

In this case no doubt the mucous lining of the urethra was diseased by the course of life of the patient, and the long train of suffering and discomfort through which he passed was due to intemperate habits and excessive venereal indulgence.

These cases should not be forgotten by any one who is called upon to treat this disease, for though perhaps they do not awaken any very great sympathy, yet they undoubtedly give us some clue to the nature of it, and some means to prevent its recurrence, for if the diseased condition be not removed, any sexual intercourse will bring on a discharge.

There is a third class of cases occasionally met with, in which much resemblance to gonorrhœa exists, namely, those in which violence has caused urethritis. Perhaps no better example of this need be given than the following. Here, no doubt, the rough surface of the calculus produced urethritis, which might have been mistaken for gonorrhœa. Yet in this case comparatively little pain was caused by the calculus until it was productive of retention of urine.

On the — of March 1851, at 10 A. M., a man named Tighe, a blacksmith, of intemperate habits and delicate appearance, presented himself as an out-door (emergent) patient, at Dr. Steeven's Hospital, Dublin, of which Institution I was then Clinical Surgeon. The patient complained of retention of urine of 24 hours duration. He presented the usual symptoms of this affection, and when submitted to examination, was found to have a hard, dark coloured body firmly fixed in, and protruding for ¼ inch beyond, the meatus

urinarius. His own efforts to remove this, so as to extract it, were ineffectual, but he was able to push the stone back sufficiently to permit the escape of a few drops of turbid and highly fetid urine. This yielded him however but slight relief—the glans penis was swollen and inflamed; the urethra distended and painful, and the bladder so full that it rose above the umbilicus. On examining the protruding calculus, it was found that the long axis of its breadth corresponded with the short diameter of the orifice of the urethra, which was not however apparently very much distended. Judging therefore that it was possible to remove the calculus by turning it so as to suit its shape to the orifice for its exit, and finding that slight retrocession of it was followed by increased mobility, I proceeded to remove it. Keeping the penis steady with one hand, I directed the patient, who continued standing, to bend well forward so as entirely to relieve the bladder from the pressure of the abdominal muscles. I then seized the protruding portion of the calculus with a very slight pair of flat-bladed forceps rounded at the ends, and pushed the calculus back until only half the part previously exposed remained visible, and then, the extremities of the forceps being well inside the urethra, and moving easily, I turned the stone so as to make the axis of its breadth correspond with the long diameter of the orifice of the urethra. Making gentle traction the calculus came forward, until $\frac{2}{3}$rd of the entire mass was protruded, and very slightly increased force was sufficient to remove it altogether.

From the size and roughness of the stone as well as the great distention and vascularity of the urethra, some slight abrasion of the mucous membrane took place, and a few drops of blood were perceived issuing from the meatus after the evacuation of the contents of the bladder. The patient also complained of a smarting pain at the orifice for a day or two afterwards. This *symptom however soon passed away.*

I had at first meditated enlarging the orifice of the urethra, fearing that, if any extensive laceration of it were to occur, it might be possibly followed by such inflammation as would prevent the easy discharge of the contents of the bladder; and dreading the establishment of "obstructive" urethritis. But I determined to obviate the probability of this by very gentle manipulation. I was deterred moreover from unnecessarily making any incision,

being aware of the ill consequences of cicatrices near the orifice of the urethra. The necessary antiphlogistic treatment was recommended, cold applications made use of to the part; but the man refused to become an in-door patient. The urine discharged upon the extraction of the stone was copious, fetid, and turbid; and alkaline in reaction. Two days subsequently I made an analysis of the urine passed by this man, the record of which has been accidentally lost, but it did not present any unusual character. The most careful examination on several occasions by myself and others failed to detect any other calculus in the bladder.

The patient stated that 24 hours before admission he found himself unable to empty the bladder, but that he did not observe the presence of the calculus in the urethra till six hours before admission, and that the protrusion did not take place for three hours after his first perceiving it; he first detected it in perinæo.

He further added that he had suffered some months previously from severe pain across the loins, which was attended with some fever and frequent desire to pass water. His urine was then slightly tinged with blood. This had suddenly ceased, and he felt no more of it. He was never conscious of the presence of the stone in the bladder, but had observed occasionally, recently, a sudden cessation in the flow of urine. This was obviated by a change of position and pressure in perinæo.

The patient subsequently suffered from copious purulent discharge from the urethra, which yielded to suitable treatment, and was nearly well when he ceased to attend at the Dispensary.

But in this case the discharge, though attended with ardor urinæ was not productive of chordee, and it stained calico and linen of the ordinary colour produced by pus.*

Axiom 7th.—Having, thus generally, considered the various excitants of urethral discharge in either sex, I proceed to consider the treatment of it when it assumes that peculiar specific character which belongs to gonorrhœa. In order fully to appreciate the most appropriate course to be adopted for its cure, we must not omit the full consider-

* I have recorded elsewhere in this number another case of calculus removed from the urethra, and which contrasts very markedly with the one above recorded.

ation of the method of its production, and the circumstances which tend to aggravate it.

As regards the former point, the disease must be regarded as purely local. Produced by a local irritation, its most characteristic sequelæ are developed in surrounding structures; and constitutional effects from it are of less frequent occurrence, and exercise little or no influence upon the disease itself. The circumstances which aggravate it belong to the same class of local excitants. The general effect upon the system, during the more inflammatory stage of the disease, is no greater than in many other purely local affections. Slight fever is often present, but never to such an extent as to derange the constitution; and the amount of pain suffered is, usually, confined to the parts involved in the inflammation, or to parts directly connected with them. Pain in the loins is occasionally complained of, but this cannot be regarded as an invariable, or a very serious, symptom.

Again, we find, as before shown, that orchitis and other forms of metastasis of gonorrhœa, do not occur in the earlier stages of the disease, although witnessed in its later progress: and yet, it is the apprehension of these accidents, I believe, that deters many practitioners from attempts to eradicate the disease by measures of an active character adopted during the early stages of the malady. Constitutional symptoms—I have before observed—are not of frequent occurrence: on this point I should add to rheumatism and ophthalmia the eruption sometimes witnessed in this disease. The occurrence of this, by no means common, result of gonorrhœa, was formerly considered as due to the administration of Copaiba, but some recent observers have noted that it has been witnessed where Copaiba has not been given.

From the rarity of eruptions as sequelæ of the disease, or the medicines given to cure it, some confusion exists as to the cause and nature of them. And I may perhaps not err if I briefly allude to them, and the two varieties most usually observed. The first of these is a papular one (gonorrhœal lichen) which generally occurs as a secondary consequence of the disease: the other eruption is like urticaria, and would appear to be due to some special action of Copaiba upon certain constitutions. That it is due to Copaiba and not to the disease is undoubted, for on the discontinuance of the medicine the eruption rapidly recedes,

and in one case which I saw in 1848 the medicine was tried on three occasions, and was each time followed by the same result. A curious fact may here be noted regarding a common bazaar medicine, frequently used to cure gonorrhœa, named Wood Oil *(Jurgun Balsam)* procured by tapping the Dipterocarpus turbinatus. This "wood oil" is largely used in Burmah as a medicine, and is found to produce an eruption of a character similar to that witnessed as arising from Copaiba. Of this fact I saw an example in a native woman who came under my care in the Native Infirmary, Madras, in 1860, and who had been thus treated for gonorrhœa, and was on admission found to have this characteristic eruption. Dr. O'Shaughnessy of Calcutta has brought to notice the almost identity, in medicinal action, of this and ordinary Copaiba.*

To pass, however, from the consideration of the results of Copaiba where productive of this eruption (a consequence that may be considered as exceptional), to those more usually observed, it will be readily admitted that given internally it does possess a special action in checking the disease. The mode of its operation would seem to be that it is eliminated by the kidneys and, mingling with the urine, so brought in contact with the diseased mucous membrane of the urethra. There are, however, many objections to this method of use, as we shall see in the discussion of the often injurious effects of this constitutional mode of treating gonorrhœa.

Various other modes of treatment have been therefore suggested, and injections of various kinds recommended; thus Tannin, Zinc and Tannin, Nitrate of Silver, Alum, Chloride of Zinc, Sulphate of Zinc, Sulphate of Copper, Sulphate of Iron, Acetate and Diacetate of Lead, Tannate of of Zinc, and various other metallic and vegetable preparation of a stimulant and astringent character have been employed; and with varying results. But, in almost all cases, these were recommended to be used in either of two very opposite ways and with very different objects. These two methods of cure may be designated as the Ectrotic (or Abortive) and the Astringent.

To promote the former Mr. Acton and others recommended the use of Nitrate of Silver (in strengths of from 10 to 30 grains to one ounce of distilled water) to be injected at

* Vide Mr. D. Hanbury's paper in Pharmaceutical Journal for January 1856.

the onset of the disease, while the inflammatory process is only *being developed* and before suppuration has been set up. The result of this treatment when fairly tried is thus recorded by the editor of the Medico-Chirurgical Review (July 1851, p. 186), whose words I quote as confirmative of my own experience in the few cases in which I know of its having been tried. And the same opinion would, I think, be expressed by any one employing this mode of treatment largely. "We have endeavoured to ascertain the value of "this treatment alone, not vitiating the experiments by "employing other means at the same time. The result has "been that it failed about as often as it succeeded; and "when it failed, it made matters worse than before."

If, however, we consider ourselves justified in adopting this method of treatment, in the hope that, with care, we may reap the benefit and avoid the evil of it, we must be still prepared to find that the great majority of cases witnessed are not suited to the conditions imposed. Not only do patients delay to apply for medical advice until the disease is fully established; but, even then, we are not unfrequently embarassed by the presence of inflamed glands, irritability of the bladder, &c., all, or any, of which would effectually forbid the use of such heroic treatment.

In a case very well suited to it—and in which the earliest possible symptom of impending gonorrhœa was noticed—and which came under my observation several years ago, this *expectant* treatment was adopted by a distinguished Dublin Surgeon, now dead. Violent inflammation ensued—prostatitis was set up—and abscesses formed in perinæo—while the gonorrhœa ran its triumphant course despite of the attempt to strangle it in its birth. I shall not readily forget the caution given to me with reference to this case by the practitioner who told me of it, "Take care when you get into practice not to try and save the reputation of a married man at the risk of riddling his perinæum with fistulæ—and not curing his clap."

To this case it would be easy to add others: but, I prefer to rely on other experience than that of the case above referred to, or of the Reviewer whose opinion I have quoted. Mr. Johnson says, "I have seen several cases of gonorrhœa, "of a most obstinate and serious description, after its adop-"tion. I have also seen inflammation of the bladder, en-"larged lacunæ, stricture in the anterior part of the "urethra, and acute synovial rheumatism follow it."

I confess that with a knowledge of such results I would hesitate to employ a remedy in which the risk was so great and the certainty so small.

For these reasons rejecting the expectant or ectrotic treatment, let us see upon what principles the *astringent cure* is attempted.

In this case the rule laid down by almost all writers is that, while the disease is acute little should be done, except pursue antiphlogistic treatment. Rest; low diet; support to the testes; antimony in nauseating doses; bleeding; purgation; leeching, &c., &c., form the unpleasant series of acts through which the unhappy patient has to pass during the acute stage of a specific disease for the specific cure of which *nothing* is being done. The use of copaiba and cubebs internally is even withheld, "lest a deleterious amount of stimulus be imparted" to the mucous membrane of the urethra.

I believe, and am supported by experience in this belief, that a good deal of the treatment above alluded to is necessitated by allowing the disease to acquire increasing power from the weakening of the patient. For if he be lowered in constitutional strength (as he will soon be if purged, and leeched, and starved) the specific disease will more readily extend.

If the nature of gonorrhœa were the same as of an ordinary inflammation, then the systemic depletion might be justifiable or even essential: but I cannot recognize any reason for postponing special treatment until the disease has thoroughly taken possession of the patient.

Perhaps no better argument could be found against such a system than that afforded by the known method in which gonorrhœal ophthalmia is dealt with. Here, as far as we know, the poison is strictly identical, and the disease is only more perilous from the delicate structures here involved. But do we hesitate to use strong measures of an essentially active character? Certainly not.

The error into which practitioners generally seem to have fallen is that (if abortive treatment is impracticable or if the time for it has gone by) any injection must necessarily be injurious and likely to produce increased inflammation. I may ask is this rule found to apply to ophthalmic disease? Are stimulating injections never *here* employed to reduce inflammation?

Again, it would seem to be argued that, because copaiba

will, in passive inflammation, act beneficially, it must be applied to such a condition alone: and not, *in suitable doses*, to any other state of the inflamed mucous membrane. Let us for a moment, on this point, urge the remembrance that copaiba is actually irritant, in some persons (if given internally in ordinary doses,) inducing vomiting; while if long continued it induces passive congestion. But sulphate of zinc, or of copper, is equally irritant in emetic doses, and astringent if given in smaller quantity.

Remembering these facts I would infer from them that it may be possible so to adjust our doses of copaiba as to exercise its influence benefically even during the acute stage of the disease. This I would propose to do by injection, in which we can accurately regulate the amount of it which is brought to bear on the inflamed surface.

There have been, however, many suggestions for the treatment of acute gonorrhœa by other means than strong caustic injections. Thus M. Venot (Medical Times. April 19th 1851, p. 433) suggests the use of chloroform. This is to be used under the same circumstances, and in the same manner as the solution of nitrate of silver; and, like it, is less efficacious after the 2nd or 3rd day. I have no experience of this mode of treatment, but Professor Sigmund does not seem to have found any superiority in it over ordinary injections.

The same method of treatment was strongly advocated by Mr. Behrend, (Lancet, July 3rd, 1852) and as strongly objected to by Mr. Keene of St. Bartholomew's (Medical Times and Gazette, August 21st, 1852, p. 197), and certainly the weight of evidence and of argument preponderates in favor of the opponents of this treatment. Chloroform is one of those agents which, being found applicable to many classes of cases, is dragged in by its admirers to treat every thing from sea-sickness to strychnine poisoning, and from gonorrœha to hydrophobia!

Ricord prescribes under the same condition a lotion consisting of one part of tannin, one of sulphate of zinc, and 100 of rose water. As an astringent this lotion would be useful in any relaxed or debilitated condition of any mucous membrane; but its special applicability to gonorrhæa in the acute form is not very apparent.

Mr. Johnston recommends the use of an injection of the diacetate of lead, two drachms to six ounces of water; an

injection of alum, 4 grains to the ounce; infusion of tea one drachm to half a pint;—these to be alternated.

But the use of these remedies is always advocated with the proviso that the acute symptoms of the disease must have passed away. We might perhaps be excused were we to enquire when the "*claps*" which (as recorded in the Lancet, Nov. 13th 1847, p. 510) though contracted in 1800 were still vigorous in 1840, could be assumed as having passed into the chronic stage?

Again, if the cure is to be effectual, it should, if possible, be induced *before* a chronic state of disease is established; for it cannot be doubted that it is more difficult to cure a chronic gleet than the acute affection: and relapses of gleet are more frequent than of active gonorrhœa.

That gonorrhœa may be cured by copaiba, and that the action of this drug is local and not constitutional, can be demonstrated occasionally. Thus Professor Miller says, "If "a patient with fistula in perinæo have contracted gonor- "rhœa, and if the whole of the urine be permitted to pass "through the fistula, no benefit will accrue from any dos- "ing with cubebs or copaiba. But when, by shutting up "the abnormal aperture temporarily, the urine is made to "pass over the whole urethra, amendment is at once ob- "served." (Practice of Surgery, 2nd Ed., p. 481.) A case of this kind has also been recorded.

This, then, affords us a direct clue to the rationale of treatment, for if contact with the affected portion of the urethra be required to ensure the specific curative action of copaiba, we can at once effect this by injection directly into the canal. Professor Sigmund would appear to have tried injections of pure copaiba and of chloroform, and to have failed with them.* This perhaps may have arisen from the known variety of action, dependent upon the different degrees of strength, of *several* medicines. Thus iodine (applied externally) may be caustic, vesicant, irritant or promotive of absorption: and nitrate of silver may be varied in its properties from actual caustic to the mildest astringent. With a medicine possessed of such a special action on mucous membranes as copaiba has, its use undiluted would very probably be injurious. But if properly diluted, and especially if given in certain combinations, there is little doubt that

* Vide Med. Times and Gazette, Nov. 6th, 1858, p. 478.

it may be made to cure gonorrhœa rapidly and effectually in a very short time.

The formula which I have generally used, I invariably employ entirely independent of the fact of suppuration having been set up. This prescription is founded on one received years ago from a fellow student, who said it was derived from the advice of a French Surgeon. The prescription was given to me about the year 1848: but in the Medical Times and Gazette, August 18th, 1855, p. 164, Dr. A. Mercer Adams of Dumfries arguing on the researches of Dr. Roquette of Nantes, who proved the local action of copaiba, applied the knowledge of this fact to the cure of a case of chronic gonorrhœa with the happiest results. In this case a weak mucilaginous solution of copaiba was injected, and the case was cured in four days. Dr. Adams adds very naturally, "Does not all this seem to warrant "the assumption that copaiba acts locally on the mucous "membrane of the urethra, by means of its active principle "which is held in solution in the urine? And if so, may we "not yet be able to treat puriform discharges from the "urethral and vaginal mucous membranes by means of "weak copaiviferous lotions, instead of by the internal "administration of a drug so nauseous and liable to derange "the digestive functions?"

The affirmative answer to these questions is, in effect, the purpose of this paper, and my further object is to demonstrate that the disastrous effects of the use of copaiba and cubebs have not been exaggerated and should not be overlooked.

As to the exact strength to be observed in the preparation of these solutions of copaiba no precise rule can be adopted. But the success or not of the treatment will suggest alterations in this respect as well as in some of the special adjuvants which may be introduced into them.

Perhaps some of the success so frequently resulting from the use of the following may be, in part, derived from the combined action of several remedial agents, all of which are more or less calculated to check any discharge from a mucous surface.

I usually order the following injection to be used after a full dose of castor oil; the usual precaution of previous micturition being enjoined. And, I may add, I always

myself show the patient how to use it, for on this depends much of its utility.

℞. Sulphatis Zinci gr. ix, xii.
Calaminæ, ʒ iss.
Bals. Copaibæ rect.
(Vel Ol. Copaibæ,) ʒ ii.
Mucilaginis Gum. Acaciæ ʒ ss.
Tincturæ Opii ʒ ii.
Aquæ Rosarum, *ad.* ʒ vi.
Misce.

Ft. Lotio, "to be shaken before use."

"*To be injected three or four times a day as directed.*"

The object of this combination is to have the special action of copaiba, in a pure state and in suitable combination with other astringents, brought to bear directly upon the diseased structure, and to assist it with sulphate of zinc which has in small doses (as here recommended) the property of enhancing the action of copaiba.

The insolubility of the latter is overcome by its being held suspended by the aid of the added mucilage.

The raw and sensitive condition of the mucous membrane, and its tendency to *weep*, is corrected by the calamine—which is held suspended by the mucilage.

And lastly—if pain be great—or the disease be declining—the use of tincture opium, or of a similar preparation of catechu, may be had recourse to. I have put down *tincture* of opium, although the presence of the *spirit* contained in it is perhaps objectionable. But I have never observed any ill effect from this, and it enables us to render the lotion more uniform in strengh throughout; and it prevents the tedious process of reducing to impalpable powder the watery extract of opium which would be a more elegant and appropriate form of combination.

I have used this injection, with modification as to the quantity of the several ingredients, in a very large number of cases in every stage, *and in no single instance has it produced orchitis or any other form of inflammation.* It gives little pain. It is generally, in my hands, followed by almost immediate alleviation of the ardor urinæ and of local pain; the discharge is rapidly lessened, and I have had cases of gonorrhœa occurring for the first time cured in from six to eight days, and subsequent cases in periods of

from three days upwards, but the cure is usually much more rapid than here stated.

The details of these cases are not here required; my object is simply to state general results and to afford to others the conclusions, as to the management of this disease, at which I have arrived, that they may be tested by others in practice.

But, in the Civil Dispensary at Honore (1855-56 and 57), I largely employed this remedy in public practice and I brought the results to the notice of the then existing Medical Board. I similarly tried the same remedy in 1859 and 1860, in the Monegar Choultry and Native Infirmary at Madras, and in the Surgical Wards of the late Madras Sapper Militia Regiment, and in private practice since my residence in a public Hospital as a student—and I have found it *almost invariably* successful in arresting gonorrhœa.

There is another advantage which should not be overlooked by the advocates of local treatment in this disease. I allude to the well known fact that although in the male the action of copaiba may be found to be sufficiently developed from the urine, and so effect a cure, yet in the female where the disease so frequently attacks the vagina the same result cannot be expected, and does not follow. Ricord, Professor Sigmund, and others, have recorded their experience to this effect, and I have found the greatest facility in curing this affection in the female by the simple use of this injection.

To use it properly a bent glass tube of the calibre of a speculum, should be procured—or a piece of Gutta-percha tubing moulded to the required shape—and, the patient being placed in the recumbent position, the injection should be poured in at the upper end of the tube which would then be vertical. If the hips of the patient be raised and the shoulders slightly depressed, the uterus will subside and cause the full dilatation of the vagina; and the lotion will be equally applied to its entire surface. In the treatment of this and all vaginal affections no greater mistake can be made than to trust to the patient's comprehension of instructions—and the practitioner should himself, or through an experienced nurse, see the injection applied and take care that it is properly used at the time, and as often as, directed.

I believe that a little care on this point, will often convert an apparently interminable case into one equally satisfactory to the prescriber and his patient.

He should also see that the ingredients are carefully and thoroughly mixed and that suitable directions are affixed to the bottle.

But I am not disposed to give credit solely to the composition of this Injection—for, I believe that the chief merit of my mode of treatment is in the method of its use.

In the first place as to the *male syringe* employed—Mr. Acton speaks of a glass one containing two drachms—Professor Sigmund (op. cit. antea.) recommends one of tin and with a conical tube; the syringe is to be a "small one;" while authors generally specify only that the instrument must be of glass and with a nozzle that with ease will pass well into the urethra.

I use invariably a two ounce glass syringe and this is to be half filled with the injection previously well shaken. The injection should be thrown in *very slowly and continuously* until the whole urethra is distended and the syringe should not be removed, or the injection allowed to be discharged, until it has been in contact with the urethra for a minute or more—*the longer the better.*

Micturition previous to injection; moderation in diet and especially as regards spirituous drinks; quiet as far as possible; copious draughts of iced water, linseed tea, weak mucilage and water, barley water, &c. *(without sugar)*, of water slightly alkaline from the addition of liquor potassæ, or lime water, may be all of them recommended and will be found efficacious in allaying ardor urinæ or a tendency to dysuria.

But of copaiba or cubebs I never give any by the mouth. And the only medicines I administer are occasionally castor oil (as the only purgative not likely directly or indirectly to influence the urine) or emollient laxative enemata and, *very occasionally*, small doses of tartar emetic if the patient is feverish and if the attack is a first one.

If chordee is threatened, or has occurred, the use of the following suppository at bed time will, as a general rule, prevent its recurrence.

℞ Camphoræ, gr. iv.
Ext. Opii. gr. i. to ii.
Saponis gr. v. *Misce.*

Should irritability of the bladder be set up in the progress of the disease the following will generally remove it.

℞ Camphoræ, gr. xviii.
Pulv. Ipecac Comp. gr. xxiv.
Carbonatis Sodæ, gr. xxxvi. *Misce.*
Divide in chartulas vi.

One to be taken three times a day.

Except these remedies I scarcely ever use any other, and one or two professional friends to whom I have given these prescriptions have found them equally efficacious.

To the treatment of gleet, and of the disease when passing into a chronic condition I shall recur in considering the concluding topic of my present enquiry.

Before passing from this branch of the subject I should however remark that, as generally recommended, suspensory bandages—fomentations, &c., should not be neglected. I do not dwell upon them as they are merely intended to fulfil, even more fully, the end aimed at in the system of purely local treatment advocated by me.

8th Axiom.—Having reported thus favorably on the system of local treatment, I feel that it is right, before passing to the review in detail of the practical results of it, to notice the grounds upon which I object to the internal administration of copaiba and cubebs.

One of the worst cases of dyspepsia I ever witnessed was in an officer who had two years previously been treated freely with copaiba and cubebs for the cure of a very obstinate gonorrhœa. The patient, when I saw him, was a tall, slender, anæmic looking man, of great physical strength naturally, but then languid and depressed in spirits. He suffered from dyspepsia constantly; his food, in however small quantities it was consumed, caused great pain on ingestion; his bowels were usually costive; his appetite very bad. He occasionally suffered from diarrhœa, due to long continued constipation—and sometimes felt a dry and harsh feeling in the throat on swallowing. He referred all these symptoms to copaiba of which he had taken enormous quantities, the effect of which, with rigorous antiphlogistic treatment, had reduced him more than 19 lbs. in weight in six weeks, and then the disease was by no means cured. His habits were strictly temperate; he used little beer; no wine; and he kept regular and early hours. The palatine and œsophageal mucous membrane was found in a state of chronic passive congestion. Having satisfied

myself that no organic disease was present, and that he was not suffering from tænia or any other form of worms (which I at first was induced to suspect), I determined to endeavour to restore the lost tone of the intestinal mucous membrane by tonics; and to relieve the constipation by small doses of a suitable purgative.

For this purpose I used a combination which I have found very useful in cases of loss of appetite, and debility, arising from want of normal power in the stomach and intestines, complicated with constipation. The following was first ordered.

℞ Infusi Gentianæ, ℥ xii.
Sulph. Magnesiæ, ʒ vi.
Disulph. Quinæ, gr. xii.
Acidi Sulph. dil., ♏ xxx. *Misce.*
Fiat Mistura;

"Two ounces to be taken three times a day."

This was continued for ten days with marked benefit, and he then took decoction of bark with tincture of cascarilla and iodide of potassium, with five grain doses of pil. calomelanos comp. every second night; and five grains of compound rhubarb pill on the alternate evenings.

Within a fortnight from my first seeing him he was much better and a month afterwards was quite restored. He then, by my advice, gave up all medicine except the following "dinner pills," which he used occasionally.

℞ Pil Aloet. Comp., ℈ ii.
,, Hydrargyri, gr. xii.
Ext. Hyoscyami, gr. viii. *Misce.*
Fiant pilulæ xii.

"One pill to be taken before dinner when required."

Without any further treatment he rapidly recovered his health and spirits, increased in weight beyond his former standard, and was perfectly cured.

But for two years this officer had suffered exceedingly, and apparently this arose alone from the cause named.

Cases of "nearly fatal gastro-enteritis" are spoken of by authors, as arising from the same cause. Inflammation of the kidneys has also been known to result from the too free use of the same medicines.

The occurrence of such cases in the hands of experienced practitioners would surely be sufficient to make us at least hesitate before exposing our patients to such a risk.

But there are other, and scarcely less, serious objections to this method of treatment. In the first place the medicine is taken at all times with repugnance, and it is often followed by nausea and actual vomiting, while some persons find it impossible to take it however prepared.

Again, it is sometimes entirely carried off by the intestinal canal, and so has no influence on the specific disease it is intended to cure.

As before remarked we have no possible means of appreciating the actual quantity brought in contact with the urethral mucous membrane, and this contact is of but exceedingly momentary duration; and Professor Sigmund remarks that injection of urine containing traces of copaiba has not been found to exercise any beneficial effect upon the discharge.

An additional argument against its use, in cases where its nauseating property is partially prevented, by the administration of it in capsules, is found in the frequent adulteration practised in these preparations.

Oil of turpentine and the "wood oil" before alluded to are, by no means, unusually found in capsules sold as containing "pure copaiba." Rape, castor, poppy seed, and other oils are similarly used. To guard against these adulterations, and to ensure the purity of the oil used in preparing the injection which I employ, the following remarks from the Edinburgh Pharmacopœia should be attended to. The characters of the pure oil are thus described "transparent, free of turpentine odour when heated; soluble in two parts of alcohol; it dissolves a fourth of its weight of carbonate of magnesia, with the aid of a gentle heat, and continues translucent." To be certain, however, it is much better to have recourse to the process of distillation involving a loss of only 40 per cent. and yielding a reliable medicine.

In alluding to the internal use of copaiba, I should not omit to notice some forms of preparation in which it certainly can be taken with less inconvenience than in the ordinary draughts ordered to be prepared in routine practice. The *Copahine Mege*, (capsules which contain both the resin and the oil of copaiba, and cubebs to the extent of ten per cent., together with alkalis) would seem, both from the care with which they are prepared and the elegance of their form, to be most likely to be successful, but they do not appear to me to fulfil the desired end. A reference to cases treated

by them gives the following results. Mr. Lloyd of St. Bartholomew's Hospital, reports (Lancet, Nov. 6th, 1852,) an instance in which a case, of four days duration before admission, was treated by the administration of 5 capsules three times a day ; *no improvement in six days* ; the dose then increased to 18 capsules per diem (slight improvement after two days) ; next, 21 a day.

Thirteen days of the treatment, from first dose, had nearly caused the cessation of the discharge, but the bowels were decidedly relaxed : the quantity of medicine was now increased to 24 capsules per diem and after 5 days the discharge had ceased.

Thus in 18 days the patient had taken 312 capsules, and 4 days afterwards the discharge slightly re-appeared, but soon yielded to renewed treatment. The same gentleman records other cases ; in one eight, and in another thirteen days treatment were required. Mr. Poland, of Guy's Hospital (op. cit. antea) records 5 other cases ; in one of which no benefit resulted after 8 days ; in one cure resulted in 16 days (this was a chronic case on admission) ; and in the remaining three cases the results were improvement, purging and cure ; followed by relapse, and no change, respectively.

I have myself treated obstinate cases, and known of others, but I do not think that any eight cases, treated with copaiba, zinc and calamine injection, have ever proved so tedious or so unsatisfactory. I mean of course any eight cases taken consecutively—and of the ordinary kind.

I have before alluded to the inapplicability of the internal method of treatment to female cases. I now revert to the subject as forming another objection to it, namely, that not only in females is this mode of administration of the drug little likely to benefit the gonorrhœa, if it involves the vaginal mucous membrane, but the stomach of the patient may be deranged without any corresponding advantage as regards the local disease.

To conclude this subject—it has not been my intention to disparage entirely the possible utility, in some cases, of internal medicines, my object has been rather to advocate another line of treatment which is, in my experience, less open to objection.

I feel that it would be fairly urged, against local treat-

ment, that its success had not been proved, did I fail to lay before my readers the cases in which, as I consider, I have proved its efficacy.

In these cases the treatment can be seen from day to day and the results will be patent to every one. In them I can also show the varying treatment occasionally required in exceptionable and in obstinate cases.

The length to which this would extend my present paper prevents the possibility of my including these topics in it. I trust, therefore, to be able to present these matters under a consideration of the subject of "The treatment of Acute Gonorrhœa by Injection alone," which shall appear in the next number of this Journal.

Art. VII.—*Gleanings from the Hindoo Formulary.* By J. J. Wood, Assistant to the Professor of Botany and Materia Medica, Medical College, Madras.

It had been my desire, when time permitted, to arrange all the really useful indigenous medicines,—not alphabetically, which is merely a matter of convenience, both to those who write, and those who occasionally consult books on the subject,—but in a way calculated to be of more practical utility to the student of Botany as well as of Materia Medica.

Dr. Waring has, happily, in my humble opinion, hit upon, perhaps, the best method of arrangement;—one better suited to the wants of the practitioner, both here and in other countries, than any other. Without at all, therefore, interfering with his papers, published, either in this Journal or in the "Indian Annals," I hope to be able, circumstances permitting, to introduce occasionally such of the "Native Medicines," simple or compound, as I have either used myself or have seen used; together with any thing else worthy of notice in native practice.

And if others, (and we know there are such,) who have made enquiries into these matters, and have used the drugs of the country, would also contribute something *practical* in this direction, we should soon have a mass of facts, useful and instructive; as well as a sufficiently comprehensive and well-arranged Materia Medica, which would make us not a little independent of the supplies from other countries.

ORIGINAL HINDOO FORMULÆ.

APERIENT CONFECTION OR "ELECTUARY." No. 1.

		Tolas or Parts.
1.	Chebulic Myrobalans	2
2.	Black do.	1
3.	Citrine do.	1
4.	Belleric do.	1
5.	Emblic do.	1
6.	Bitlaban	1
7.	Senna	2
8.	Coriander	3
9.	Ginger	1
10.	Anise seed	1
11.	Honey	6

After having finely powdered the solid ingredients, mix the whole with the honey.

Dose. The bulk of one, two or three nutmegs.

APERIENT ELECTUARY. No. 2.

		Tolas or Parts.
1.	Chebulic Myrobalans	2
2.	Black do.	1
3.	Senna	1
4.	Raisins	1
5.	Oil of Almonds	1½

Pulverize the first three ingredients; let the raisins be ground into a fine paste; then mix the whole with the oil of almonds.

Dose.—Half a tola = half rupee, weight.

THE MYROBOLANS.

Myrobalans (meaning ointment-nuts) is a term applied to certain dried fruits,* belonging to different natural orders.

They have been employed in medicine for ages in various countries.

There are five commonly spoken of, viz.:—

1. *Myrobalan, Chebulic,* Kadukai, *(Tam.)*
   Karaka, *(Tel.)*
   Huldah, *(Duk.)*
   Harā, *(Hind.)*

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* The term Myrobalan has also been given to the seed of the Moringa pterygosperma; otherwise known as the Ben-nut.

2.	*Myrobalan,*	*Black,*	Singhi, or Pingee Kadukai, *(Tam.)* Zengi-har, *(Hind.)* Zanghi huldah or Baul huldah *(Duk.)*
3.	„	*Citrine,*	Sooratha Kadukai, or Perun Kadukai, *(Tam.)* Harā, *(Hind.)* Kaboolee Huldah, *(Duk.)*
4.	„	*Belleric,*	Thanikāi, *(Tam.)* Bulla, *(Duk.)* Beheyra, *(Hind.)*
5.	„	*Emblic,*	Nellie Kai, *(Tam.)* Woosherikaiā, *(Tel.)* Aoonlá, *(Duk.)* Anola, *(Hind.)*

The first two are the produce of one and the same tree, the *Terminalia chebula;* the difference being, that the first is more or less matured before drying, while the second is the fruit gathered before maturity. No. 3 is the fruit of the *Terminalia citrina.* No. 4, the produce of the *Terminalia bellerica:* all belonging to the natural order *Combretaceæ;* while No. 5 is yielded by the *Emblica officinalis,* of the *Euphorbiaceæ.*

All the Myrobalans contain more or less gallic and tannic acids; but they are nevertheless purgative in various degrees, the most active of them being the black myrobalan.

I need not, in this place, enter into any more particulars regarding them, as Dr. Waring's papers in this Journal, (vide No. IV, April 1861) in addition to what has been written by Doctors Ainslie, O'Shaughnessy and others, sufficiently supply all the required information.

Bit-Laban.

This ingredient of the Electuary, No. 1, has been fully commented on by Dr. Waring in the last number of this Journal, so that there is but little to add in this place.

"It is prepared" (Dr. Ainslie informs us) "by melting together for about six or seven hours, in an earthen pot, an impure muriate of soda, called samur (from a salt lake of that name near Mirzapore) and Emblic myrobalans (Aoonlas) in the proportion of fifty-six pounds of the muriate, to twenty ounces of the dried myrobalans."

Its odour; its composition, as given from Mr. Accum's analysis* of it; and the fact of its being ordered in many and various diseases, remind one very much of the mineral waters; and look at it how we will, we cannot help coming to the conclusion that very little, indeed, can be gained by the fusion with the myrobalans.

This substance is frequently confounded with the Rock salt; and the native druggist, when asked for one, will often give the other.

Dr. James Johnson in his "Influence of Tropical Climates on European Constitutions,"† says, "I shall now advert to some very efficacious native medicines, which they apply to the cure of this disease, especially when it manifests itself in the form of agues, * * * * * *."

"Their first object is the complete evacuation of all bilious and sordid colluvies from the stomach and bowels."

"For this purpose, they have recourse to a black purging salt—*Bit-noben*, or *Kala neemuck*—a solution of which in water is certainly one of the most nauseous potations that can well be conceived, having an abominable taste, and a flavour resembling rotten eggs, or sulphuretted hydrogen gas. This medicine proves eminently cathartic, and powerfully emulges the liver and its ducts, carrying off vast quantities of vitiated bile, and other offensive fæcal matter, from the intestinal canal."

There can be no objection, as far as I can see, to the use of this substance in Indian practice, particularly after becoming acquainted with the process of its manufacture, chemical composition, its properties as a medicine, and the fact of its being procurable over the greater part of India, and at a very trifling cost.

Let us not forget that we not unfrequently use other medicines, with the composition of which we are but imperfectly acquainted, viz., James's Powder, Warburgh's Fever Tincture, and others. And are there not other, so called empirical compounds, indented for regularly, and used by Medical Officers in India, such as the Treeak farook and the Oleum nigrum? for which, alas! it must be confessed, we

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* See Dr. Waring's paper in last issue of Journal, p. 240.

† See article "Endemic of Bengal."

have but sorry substitutes in the treatment of many cases of a very fatal disease—Beriberi.

And, finally, who has not seen the "Puttoo" used in the treatment of the "country sore-eye," and that with success?

Having made a few remarks on some of the ingredients contained in the formulæ, I may conclude by a few more on the compounds themselves.

Both formulæ have been in my possession for several years; and having been satisfied, after long and repeated trials on myself and others, that I had in the first prescription, a safe and efficient purgative, I never made any experiment with the second, as No. 1 contains the principal ingredients of No. 2, and something valuable besides, viz., the Bitlaban or purging salt.

I have constantly prescribed No. 1 in many cases, depending upon a loaded state of bowels; in congestion, torpidity, or vitiated secretion of the liver; in fevers; and in other diseases where brisk purgation is required.

To the sedentary and the habitual student, it is a better medicine, as far as my experience goes, than any of the aloetic or other compounds, so frequently prescribed. To those subject to hypochondriacal attacks, it is, I am fully convinced, a positive blessing; for frequently, one or two full doses of this medicine has proved sufficient to dissipate all the patient's imaginary ailments and fears, and make him as cheerful, and as comfortable in his bodily feelings, as he could expect to be.

And it may not be out of place, to add here, that, in my humble opinion, this medicine is just as effectual in the ordinary *functional* disorders of the liver, to which Europeans are so subject in this country, as the oft repeated doses of calomel and blue pill; and to say the least, much more harmless.

I am aware that it will be urged, by some, that we have many good purgative medicines already, and that, therefore, there is really no necessity for encumbering ourselves with any more. But there are many and evident reasons for investigating the properties of any drug or compound likely to be of service, under the various circumstances (particularly in this country) that will occur to any one giving

the matter a full consideration, and which it is unnecessary to enter into here in detail.*

Further, it has been well remarked by a physician of eminence, that "There is a difficulty we meet with in the exhibition of purgatives, viz., that they will not act but in their full dose, and will not produce half their effects if given in half the dose. For this purpose we are chiefly confined to aloes. Neutral salts in half their dose will not have half their effect; although even from these, by large dilution, we may obtain this property; but besides them and our present medicine, (aloes) I know no other which has any title to it, except sulphur."

Now, many, who have tried this compound, can testify that in a small dose it is a gentle aperient, while in a large one, it is a brisk purgative.

When little more than the bulk of a nutmeg is taken at bed-time, it simply unloads the bowels, causing one copious, semi-consistent motion, early next morning. But when two or three such boluses are taken, it will be found to be decidedly purgative, the effect being generally in proportion to the dose. Not only are the motions fluid from a large dose, but they are frequently deeply tinged with bile; indeed, now and again, we see nothing but, what appears to be, "pure bile." The senna, no doubt, has claims to be called a cholagogue, but I am satisfied that the bitlaban has a greater share in emulging the ducts of the liver than any other of the ingredients.

In the first electuary, we have a medicine, the ingredients for which are procurable at, perhaps, every druggist's bazaar in India, and which, being remarkably cheap, is far preferable to the more costly confections of senna and cassia of our Pharmacopœia.

From the difficulty experienced in procuring some of the ingredients of the confection of senna good, and from the complicated and troublesome process ordered in making it, it is seldom obtained properly compounded, and, in this country at least, it never keeps for any length of time.

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* I would here request the reader to turn to Journal No. III. for January 1861, where, in a Review on Dr. Waring's work on Bazaar Medicines the Editor has some excellent remarks on the substitution of the cheaper Indian drugs for the more expensive European ones.

On making up a large quantity of this medicine, on one occasion, I omitted the greater part of the coriander and anise seed, which materially lessened the bulk of the dose, making it more convenient to take, without (of course) altering its efficiency.

The quantity of honey given in the formula is very little more than sufficient to keep the powdered ingredients together in a solid mass, and the form of administration is therefore a bolus, which is not so agreeable to some persons as a semi-fluid electuary, into which it can easily be converted by the addition of a little more honey. It has been suggested to me that the honey might be omitted altogether, and the medicine kept for use in the form of powder.

As purgative medicines are far more frequently used than any other, these formulæ would be found very acceptable to families* resident in India: particularly up-country;" who constantly purchase, and, at no small cost sometimes, Holloway's or even Morison's pills.

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* The formula, No. 1, is now in the possession of a great many, European and Eurasian as well as native, who have asked me for it from time to time, and who make it up for themselves.

PART II.

REVIEWS AND NOTICES OF BOOKS.

The Forests and Gardens of South India. By HUGH CLEGHORN, M.D., F.L.S., Conservator of Forests, Madras Presidency. London: W. H. ALLEN and Co., 7, Leadenhall Street, 1861—Sm. 8vo. pp. 412.

OF the eminent Botanists that India has produced, Madras has furnished some of the most distinguished, and these all from the ranks of the Medical Service. Where could the student of Indian botany go for a knowledge of the plants around him, were the works of our William Roxburgh and Robert Wight not in existence? All honour to Wallich, Royle and other distinguished names, that will live as long as the science they adorned survives, but their labours were too special and their researches too local to invest their works with the interest and value that belong to the "Flora Indica" and the "Icones." We grant that the "Flora Indica" has many blemishes, even considering the light and the day in which it was written; but we must recollect that it is the work of a pioneer, and that before its completion the hand that alone could have given it the proper finishing touch, had, alas! rested from all labour. Taking it all in all we are thankful to the filial piety that gave it to the world and proud of the master mind that produced it; and it may truly be said to be *the* foundation on which all subsequent Indian botanists have built.

Turn we now to Dr. Wight, and where are the works of one solitary labourer that will, in extent, beauty or accuracy, bear comparison with the "Illustrations," the "Icones" and the "Spicilegium?" The patience and courage necessary to produce such works in India are beyond all present computation, and we can only wonder and be grateful. Then there is the "Prodromus," in the production of which he had a yoke-fellow. True it is but a fragment, but it is such a splendid one, that it has but few rivals in sterling value in the whole field of botanical literature.

Nor must we pass in silence William Griffith, perhaps surpassing both of these in power and originality of mind, although less known to fame from his papers having been

left in an unfinished state; for death surprised him in the midst of his labours and in the flower of manhood. It is to be feared too that the editor who undertook to publish his writings was not equal to the task; at all events they did not receive justice. Poor Griffith! he was but scarcely remunerated by his honorable masters, and only appreciated when dead.

In our own day the author of the work under review is pursuing, with no faltering step, the path to distinction, as a student of Indian botany. Our great regret is that we have not now before us also the "Manual of Indian Botany" so long promised; which we feel sure will be a work worthy of the subject, and for the execution of which he has means at his disposal, that it is the fortune of but few to possess. Let us, however, for the present be thankful, and hope that it may soon be our good fortune also to welcome the birth of the "Manual."

Forests and gardens are, to most men, and to all lovers of nature, very pleasant things to see, think of, and speak about. Who, that has ever lived in, or even visited, a fine old forest in our native land, would not sing with old fashioned Allan Cunningham?

> "O hame, hame, hame to my ain countrie,
> When the flower is i' the bud and the leaf is o' the tree."

Indeed a love of trees seems to be a sort of instinct; and who can describe the pleasure of watching the sapling one's own hands have planted, shooting up into the splendid tree. How pleasant too to recall to memory the deep forest shades carpeted with velvet moss—the sound of the summer air amongst the leaves or the sunny glade enlivened by the wandering brook, and the roe amid the tall furze and brake! Indian forests, until lately, were but rarely visited by Europeans, except the adventurous sportsman or student of nature. These, too, so often paid for their temerity by an attack of fever, that few cared to approach such dangerous localities.

Hence our knowledge of the extent and value of our forest possessions was limited in the extreme, and our faith in their resources apparently unlimited, as they were recklessly cut down in all directions. Trees of unwieldy dimensions were reduced by a process of trimming, often involving the loss of half the log; others, to save the back of the woodman, were cut at the height of a yard or more from the ground, and branches, tops and butts were left to

decay or be consumed by the annual fires. Only the most valuable sorts of timber too were cut, and thus teak, blackwood, poon, &c., were devoted to purposes for which their employment was disgraceful waste. Some of our readers have doubtless heard of the Commissariat Officer at Seringapatam, who, having procured a large supply of firewood from the forest, found, to his dismay, after it had been cut into billets, that the whole was very fine satin-wood! Pilfering too was practised to an enormous extent; the thieves not being content with what they required for their own use, but often systematically felling the finest trees and making it their trade to sell the timber. No sort of provision either was, for many a long year, made for the future by *planting*, here obviously a duty of the State.

Such being the state of matters when the Government resolved to have a Forest Conservancy establishment, and selected Dr. Cleghorn to organize it, we may form some idea of the nature and extent of the labour he had before him. "The Forests and Gardens of South India" gives an account of what he has done, but as to the nature, &c., of the work we will permit our author to speak for himself, by a quotation from his modest preface:—

"It is simply a compilation of papers, commencing with three Annual Reports, which indicate the progress of the department, and which are followed by a memorandum on *Kumari*—an injurious practice, which destroys vast quantities of the most valuable timber—and by other memoranda bearing more or less on the subject of Indian forests."

During the brief period that he has held the appointment he has visited every forest of note in the Presidency, from the Sal tracts of Gumsur to the frontier of Travancore; everywhere making his presence felt by the establishment of order and economy.

There can be no doubt, however, that the Conservancy establishment, sanctioned by Government, is by far too small to meet all the duties imposed on it. Remembering the difficulties of conservancy at home, where every road and pass of importance has to be guarded by the cottage of a keeper; it is rather amusing to find that the Madras Government expect complete protection, from a staff of 53 peons for the whole Presidency!

Much interesting information is given concerning the experiments in planting teak in Malabar, which were begun and carried on by Mr. Conolly, under very great difficulties.

It is highly gratifying to learn that his efforts were crowned with eminent success, and that in 1860 about 70,000 teak plants were being put down annually in the Malabar country. We think also that sandalwood might, with much profit to Government, be planted in many tracts of its native soil. In Mysore and Coorg there are thousands on thousands of acres of land, at present producing nothing more valuable than thorny shrub, and from various reasons incapable of being cultivated by the ryot with profit. Sandal is not like the teak difficult to rear from seed.

In para. 25 of the 3rd Annual Report we find some valuable data as to the *average growth of teak.*

"A knowledge of the rate of growth," says our author, "is the basis of all our systems. We are groping in the dark so long as we are without knowledge on this point. The scale which at present guides our operations is :—

10 years' growth,	1 ft. 6 in.	at 6 feet	from ground.
22 do.	3 ft. 0 in.	do.	do.
37 do.	4 ft. 6 in.	do.	do.
62 do.	6 ft. 0 in.	do.	do.
93 do.	7 ft. 6 in.	do.	do."

With regard to *Ringing or Girdling* he remarks:—

"The custom of ringing the tree before felling has been advocated, on the ground that seasoning is thereby expedited, and also more thoroughly effected. This is doubtful, at least in oil-containing trees (as teak), but the practice appears to be contra-indicated for other reasons."

We quite agree in doubting the propriety of girdling, and cannot see how any one could ever have proposed it, as a means of hastening the seasoning of the wood. Unless the whole of the alburnum be divided in the operation, the sap must ascend in the usual quantity, while the processes of elaboration and descent are completely checked. The result must be the engorgement of the tree with crude sap, which cannot but prove highly prejudicial. In ash and wild cherry-suckers cut into by boys, and young trees deprived of their bark by rabbits, we have observed a peculiar tendency to rapid decay. In the case of plants injured by rabbits, ignorant gardeners ascribe this tendency to the poisonous bite of the animals; but it would appear to be a natural process, an effort on the part of the stock to get rid of the injured extremity, by which the process of decay is vastly accelerated. We therefore think it highly probable that the wood of girdled trees will be impaired in quality.

Much valuable information will be found, in various parts of the work, on *Preservation of Timber, Seasoning of Wood,* and similar subjects. We are glad to find that the *cross-cut* saw has all but superseded the wasteful axe, in trimming. It would be well to introduce saws of better construction than those now in general use, which are very heavy to work, and the very sight of which sets one's teeth on edge. In felling too the saw saves much wood and labour. With a light one, cutting at both strokes, we have seen two men, with a third one to sway the tree with a rope, throw over immense trees quickly, and with hardly any waste.

Several reports are also given concerning the nature and extent of the resources of the various forests, which space will not permit us to notice, although they are pregnant with important information.

The subject of the *Supply of Firewood* has, from year to year, been receiving much attention from the Conservator. At page 86 he remarks :—

"In connection with the progress of railways and the undertaking of large public works, the scarcity of fuel is severely felt, and my attention is drawn to it *every where.*"

And again :—

"The price varies exceedingly in different districts and at different seasons ; but I may mention that the average has risen about 25 per cent. in most of the large towns within a few years."

This is a grave matter, for the mass of the population, and one demanding more attention from Government. From time to time experiments have been instituted to ascertain what trees, fit for firewood, grow fastest and with least care ; but unfortunately these attempts have never exceeded the stage of experiment. In the meantime firewood gets scarcer daily, and we should try to anticipate the want instead of waiting until it pinches. On the Neilgherry-Hills peat bogs afford excellent fuel, but it does not seem to be so much used as it might be ; many objecting to it on account of the dust arising during its use, which is said to be injurious to furniture. We may remark that hardly any dust will fly about, if the peat be consumed on a solid low hearth of brick or stone. Peat ashes too are invaluable for deodorising purposes ; and might be used with much advantage in the Ootacamund bazaar.

Under the head of *Avenues* we have instructions for planting avenue trees, a list of those best suited for the

purpose, &c. Seedlings are recommended in preference to cuttings, and the following directions given for planting :—

"A pit should be made three feet square, and filled with good soil, mixed with rotten dung. The plants require to be fenced and watered regularly, and the earth should be dug and kept clear of weeds. In forming avenues the trees should be planted 30 feet apart ; and when there is space a double row should be planted ; it looks well and forms a shady arch for pedestrians."

In hopes of its proving useful and interesting to some of our readers, we also extract a *List of Avenue trees.*

1. Ficus Indica. Banyan tree.
2. Ficus religiosa. Pipul tree.
3. Ficus Tsiela. Ióvi or Pedda Ióvi.
4. Ficus nitida. Chinese banyan.
5. Guatteria longifolia. Mast tree.
6. Tamarindus Indica. Tamarind tree.
7. Casuarina muricata. Casuarina.
8. Casuarina equisitifolia. Do.
9. Bignonia suberosa. Indian Cork-tree.
10. Parkia biglandulosa.
11. Poinciana Regia.
12. Adenanthera Pavonina. Redwood tree.
13. Azadirachta Indica. Neem tree.
14. Sterculia fœtida.
15. Bombax Malabaricum. Red Cotton tree.
16. Thespesia populnea. Portia tree.
17. Acacia speciosa.

Following the above is an interesting paper on Hedges, a subject of no little importance, for, as remarked by our author, "the losses sustained by the ryot from the inroads of cattle and wild animals, and other causes, due to the absence of these fences, are enormous." He might also have added, that there is no more fertile source of quarrels and lawsuits amongst villagers, than cattle trespass. The paper goes on to notice the various kinds of plants best suited for field enclosures, and concludes by enumerating ornamental plants suitable for inner fences, and plants fit for edging garden walks. But we must refer those interested in these subjects, to the pages of our author.

We have then a reprint of the jury report on the various kinds of timber and ornamental woods shewn at the Madras Exhibition, in 1855. In this, Engineers and others interested in timber, will find much valuable information in very small space. We have left ourselves little room to notice an

account of an "expedition to the higher ranges of the Anamalai Hills, Coimbatore, in 1858;" although we feel sure this, to the general reader, will prove the most attractive portion of the volume. The excursion was planned by Dr. McPherson, Inspector General of Hospitals, and our author, and the services of Major D. Hamilton were sanctioned by Sir P. Grant, to accompany the expedition as artist. We may here remark that the pencil of Major Hamilton has furnished to the work no less than eleven vigorous sketches of forest scenery, all of extraordinary beauty; and which have been lithographed, by McFarlane of Edinburgh, in a style quite worthy of the originals. Although essentially practical, yet this paper at times furnishes us with exquisite pictures of mountain scenery. Perennial streams passing through wooded valleys, rushing down deep wild gorges and laving the feet of lofty precipices; ibex rocks towering above the trees, like stern battlements; table lands and green ridges, sacred to the feet of bison, elephants and deer; dense sholas damp, dark, and rich in vegetation; and all surmounted by the weather beaten sentinel peaks, rising up into the region of perpetual cloud, where,

> "He plants the morning red,
> The flowrets white and blue
> And feeds them with his dew."

Many new species of plants were discovered during the excursion, and there is some valuable information, regarding the vertical range of vegetation, scattered throughout the paper. Sholas at an elevation of from 3,000 to 4,000 feet were found richest in their flora; and the typical forms in such situations seem to belong to Zingiberaceæ, Balsaminaceæ and other orders delighting in a moist mild atmosphere. With regard to the flora of sholas near Punachi, our author observes:—

"The following are a few remarkable forms observed: A new species of *Jenkinsia* (Wallich); *Chondrospermum; Agrostistachys Indica* (Dalzell); *Solenocarpus Indicus*, a tree called by the Kaders "Palle-ille," the leaves of which are eaten; *Elæocarpus*, *Monocera*, a new species of *Cookia* (Mur Kuringi), with a delicious fruit; *Glycosmis pentaphylla*, *Pierardia macrostachys*, with an edible fruit; *Cleidion Javanicum* ("Walle"); *Meseia*, with very large fruit; *Calophyllum*, a species with narrow lanceolate leaves; *Orophea*, two new species; *Unona pannosa*, *Guatteria coffeoides*, *Cyathocalyx Zeylanicus*, *Garcinia*, *Pterospermum obtusifolium*, *Sterculia guttata*, *Machilus*, *Casearia*, a new species; *Euonymus*, two apparently new forms, one with downy leaves,

and the other much like a lime tree; *Agrostemma*, two species; *Ophioxylon*, a new species, with falcate bracts; *Pothomorphe subpeltata*, *Acranthera Zeylanica*, *Nephelium erectum*, a very gorgeous species of *Pachycentria*; and two rare Euphorbiaceous trees, *Dimorphocalyx glabellus* and *Desmostemon Zeylanicum*, lately described by Mr. Thwaites. Many of the trees in the dark sholas are covered with beautiful epiphytes, especially the *Hoya pauciflora*, *Æschynanthus Zeylanicus, and Sarcanthus filiformis.* The dripping rocks with *Klugia*, two species, *Epithema*, &c.; cardamoms with rich aroma, and the true ginger plant, abound in these sholas. A truly aquatic fern, a new species of *Pleopeltis*, grows in great abundance on rocks at the bottom of the Torakuda river."

There is a deficiency of information regarding the Fauna of these remarkable hills, but from casual remarks we glean that elephants, bison, ibex and deer are more or less common. There are, it would appear, four distinct tribes of inhabitants on the Anamalai, viz., Kaders, Paliars, Malsars and Muduwars. In a portion of the report by Dr. McPherson, he remarks concerning these:—

"The Kaders perform no menial labour. As their name implies, they are the lords of the hills; they carry a gun, and loads also, as a favour; they are expert at stalking game, but are deeply offended if called coolies. They are a truthful, trustworthy and obliging tribe, and exercise some authority over the Paliars and Malsars. Small in stature their features resemble the African, they have curly hair, tied in a knot behind, and file the front teeth of the upper jaw to a point, as a marriage ceremony. The Paliars are chiefly herdsmen and merchants, while the Malsars are cultivators of the soil. None of these tribes reside at a higher elevation than 4,000 to 5,000 feet above the sea. All deal in the rich produce of these hills, and barter with the people in the plains their cardamoms, turmeric, ginger, honey, wax, resins, millets, soap-nuts, gall-nuts, &c., for rice, tobacco, &c."

With regard to eligibility of the Anamalai, for a sanatarium or for colonisation, Dr. McPherson says:—

"The soil on the summit of these fine mountains is deep, and covered with rich pasture. Streams of water are numerous, and appear as if they flowed throughout the year. From the extent of forest, the resemblance of the Flora to that of Ceylon, and the corresponding altitude of these hills, I believe they are suitable for the cultivation of coffee on a large scale, and for colonisation of small communities of Englishmen."

Heavy rains, scarcity of supplies and want of shelter, prevented the party from exploring the higher ranges of

these hills. Indeed after reaching an elevation of 5,000 feet, each person had to carry his own provisions for the day; as the elephants that at first accompanied the party had to be left behind, and the coolies were burdened with other impedimenta. Subsequently Mr. Beddome explored the range more thoroughly, ascending the Akka mountain, which is probably upwards of 8,000 feet in height. In a supplementary report he says:—

"We here found a beautiful piece of table-land, situated to the right of the pass down to Anjinad, well watered, sheltered by high hills to the south, and lying about 6,000 or 6,500 feet above the sea level. I encamped here for several days."

A few sentences farther on he says:—

"To the east of the pass down to Anjinad there is much higher table-land, probably 7,000 feet above the sea, copiously watered by several springs and streams. This spot and the table-land on which I was encamped, would form an admirable site for a station."

We are indeed grateful to Dr. Cleghorn for bringing to notice these fine hills, evidently capable of affording a delightful retreat from the burning heat of the plains on which they look down. As we read Mr. Beddome's description of the splendid uplands he saw, we cannot help repeating, (with slight variation) the words of our English Ariosto:—

> "I wish I had a cottage snug and neat,
> Upon the top of *Akka to reside*,
> That I might thence, in holy fervour, greet
> The bright gowned Morning tripping up her side."

They seem also to be peculiarly rich in natural products, and therefore likely to afford an admirable field, on a limited scale, for colonisation by our countrymen. We trust soon to see them turned to better account than merely affording shelter for wild beasts, and boasting a larger and more enterprising population, than the Kader lords and their wretched subjects.

Following the paper on the Anamalai we have, amongst others, reports on the progress and present condition of the public gardens, at Bangalore and on the Nilgiri. These, although full of interesting matter, we have left ourselves no time to notice. The volume concludes with a very long and invaluable *Bibliography*, naming every work of interest or value treating of Arboriculture, Botany and cognate subjects. Practical men and students who, in the Mofussil, have wished to get standard works on any of these subjects, but who, from the want of some guide, have felt dubious as

to what they should procure, will fully appreciate this portion of the work.

We have had very great pleasure in the perusal of the "Forests and Gardens of South India;" and we cordially recommend it to the general reader as a book in which he will find much to interest; to the Engineer, Forester and others interested in trees and timber as one containing a vast deal of invaluable information; and to the Botanical inquirer as one containing very many new facts.

A Hand-book of the Practice of Forensic Medicine, based upon personal experience. By J. H. CASPAR, M. D., &c., &c. Vol. I (Thanatological Division). Translated by G. W. BALFOUR, M. D., &c. New Sydenham Society, 1861—8vo. pp. 317.

THERE is no department of Medical research at once so comprehensive and so scientific in its objects of enquiry as that of Forensic Medicine: and yet there is none other in which it is more difficult to set down fixed principles, or to exclude from consideration popular opinions or the effect of general evidence.

The enquiries conducted under it involve questions of the greatest possible public import, whether these have regard to criminal offences against the life or person; or again where the rights of property are concerned. As in several of these instances, the life, character or standing in public estimation, of the accused may all depend upon medical evidence, the urgent necessity for a thorough acquaintance with these matters must be readily admitted.

And yet notwithstanding the importance of the points at issue we must admit that in no department of medical science is there to be found greater diversity of opinion on vital questions, or more pertinacity in support of preconceived notions.

The great criminal trials, especially those of recent years when crime has in every form been more conspicuous and more daring than it ever before was found, have afforded but too frequent proof of the truth of what we have just stated. Medical evidence is, just now, somewhat at a discount in the legal market, and we cannot feel any great

surprise at this if we consider the glaring differences of opinion exposed by rival witnesses for the crown and defence in the cases of Palmer, Kirwan, Madeline Smith, and the notorious Dr. Smethurst.

That medical evidence is often given by incompetent persons, and sometimes by people entirely ignorant of the laws of Legal Medicine, cannot be doubted. To remedy this—to check the reckless disregard of the interests of the crown and of the prisoner in criminal cases—and those of the parties to civil actions—much has been recently done. Elaborate works compiled with great care are now easily available by every one. Criminal trials are reported with an accuracy and at a length that makes them rather laborious reading; and we are but too apt to overlook much of the real argument of a case from the amount of superfluous facts or statements with which it is encumbered. This confusion necessarily results where these reports are prepared for the edification, or corruption, of the general public, and the small minority who seek scientific information from them must yield to the necessity, on the part of the publishers, of producing a book in which every element of romance, introduced by the legal advisers of either party, shall be carefully paraded.

In this state of the public mind, we, who seek the small portion of essentially important medical knowledge, must rely upon the works of those whose special tastes, acquirements, or position have afforded them opportunities of rightly estimating the value of every part of the evidence—or who, by previous experience, are able to lay down general principles to guide us in the investigation of similar medico-legal cases.

Except in regard to poisons and one or two special branches of enquiry, the English Surgeon has chiefly relied hitherto upon Home authors and a few of the better known French authorities. We are now, by the wise judgment of the New Sydenham Society, enabled to find information from a source, not hitherto open to all of us, as having formerly appeared in a foreign language. Professor Caspar's opportunities for the production of an original work have been singularly great, and we are now presented with the first portion of it; that regarding the various causes of death.

In investigations such as are here entered upon, and indeed in all the branches of this comprehensive subject, personal experience is essential to complete appreciation of all the

points necessary to the deduction of a reliable inference. In this regard many of the best known authorities, both British and Foreign, are wanting; and Caspar very properly directs attention to this want of personal experience on the part of several German authors. Of Henke, one of the best known of these, and one who had laboured zealously for the promotion of medico-legal knowledge, he says that he did so "without, so far as I know, ever having performed one judi-"cial dissection, stepped across the threshold of any prison, "examined any woman said to have been deflowered, inves-"tigated the doubtful mental condition of one criminal or of "a single case of malingering, or ever having stood as an "expert before any court." *(Preface, p.* vii.*)*

Actuated by the feeling that no accuracy in compilation could possibly confer on a book a value equal to that due to extended personal experience, Professor Caspar determined "in the production of this work to confine himself, as far as "possible, to his own personal experience, making use of that "of others as sparingly as possible, and that only from the "most trustworthy sources, preferring openly to confess his "own want of experience in any matter where it has been "insufficient." When to this we add that in the whole work, when completed, we shall have the records of 221 examinations during life, and of 400 investigations after death, we shall have said enough to show the importance of this book as a work of reference.

The space at our disposal does not enable us to do more than briefly review the chief subjects contained in the present volume, and we do so in the hope that the attention of our readers may be directed to the very valuable information afforded regarding them. We can do little more than trace out the method of arrangement of the work, and the more important conclusions drawn by the author.

We pass over the introductory chapter, regarding the classical interpretation of the fanciful term *Obduction* (a word for which the translator judiciously substitutes the more familar terms, *Dissection*, *Autopsy*, &c.); and the definition of "a dead body" in the Prussian Code; with only this remark, that a fœtus, of four or five months and proved to be unviable, is not considered as a dead body, because that cannot be dead which *has never lived and could not live.*

The first part of the work has regard to the "examination of the dead body," and the following three objects are enter-

ed upon under separate heads—(1) the viability of the child; (2) the unknown period at which death occurred; (3) the unknown cause of death. With reference to the first of these the author adds that "in Berlin, (and probably in all "large towns) new born children form fully one-fourth of all "cases of medico-legal investigation."

CHAP. I.—*On the Viability of a Child,* Dr. Caspar enumerates the enactments of the Prussian Code, some points in which demand passing notice. Every child born in lawful matrimony is therein assumed to be the child of the husband, unless he can convincingly prove that he has had no matrimonial intercourse with his wife between the 302nd and 210th days previous to its birth. Paternity may, by the Rhenish Code, be denied in the case of proved physical impossibility of connexion between the 300th and 180th days previous to the birth of the child. Paternity is held proved in case where connexion has taken place between the 285th and 210th day previous to the birth of an illegitimate child.

Now, as regards these enactments it is to be observed that nothing can be more difficult than to fix the limits of gestation: and that a strict adherence to the foregoing laws might brand the stamp of illegitimacy upon many a child of virtuous parents. Who that has read the well known case of Protracted Gestation, recorded by Professor Simpson, but will admit that the lady whose exposure (on board the Amazon) prolonged her gestation, was the virtuous mother of a posthumous child? And yet the period of 302 days was exceeded.

As to the second law, as above, there are numberless cases quoted (vide Gardner Peerage case, and others) where prolonged gestation passed the 300 days—and again the birth of a viable child at 180 days is allowed by more than one author.

The third law is equally unsatisfactory as not contemplating the possibility of gestation being extended beyond 285 days. From the three laws no conclusion can be accurately drawn as to what is regarded by the Prussian Code as the normal limits of gestation, except that 300 days are not impossible, and 179 are insufficient to complete the process. In a state of non-acquaintance with the civil actions that may be dependant upon proved affiliation of illegitimate children, it is difficult to estimate the justice of the enactment regarding this branch of the subject; but the smaller limits here allowed may be in consequence of greater liabilities to which the male parent is exposed in such cases. The state of our own law is so defective on

this subject that perhaps the adoption of the standard here named would be advisable.

To pass, however, from these questions which involve rather social than vital points of importance, let us see how far viability and the *fact of living* are considered as identical. "Crying on the part of the infant is, if fully proved, held to constitute live birth." This would, if universally accepted as law, lead to many strange results. Children have been known to cry and yet have been born dead. And if such a case occurred it would be difficult to say whether or not this would in English law constitute a live birth—we believe not.

Again, as to the right of inheritance of viable children two conditions would appear to be required—first, capability of maintaining a separate existence—and, that of probably attaining the average term of human existence. The necessity for the co-existence of these two conditions is proved by the remark of the author that a well formed fœtus at the 5th month, and a tenth month fœtus afflicted with atresia of the rectum and the like, would be equally excluded, though for different reasons. The diversity of opinion existing regarding the foregoing points of enquiry, involving only the birth and early existence of young children, is painfully like that found in our own law, and it is much to be regretted that no fixed principle can be laid down.

Many of the points at issue are mere points of law and the duty of the Medical witness is merely to inform the Court as to the chances of life possessed by the infant child. And here comes into consideration a question recently discussed in the French Academy which may be thus put "Is a child viable who labours under a congenital malformation necessarily fatal if let alone, but which may be remedied by operation?" To this Robert returned an affirmative reply, and Trousseau and Devergie are equally positive in their opinions to the contrary. To this latter view our author accords the sanction of his high authority, remarking that the admission of this principle would have a tendency to establish differences of degrees of viability among children of the rich and poor, citizens and country folk; and the patients of unskilful and of skilful Surgeons! On this point we may ask—if a child so circumstanced were actually to live, would it not be an anomalous decision that it was not viable at birth? It would appear a better plan to adopt the rule *that children are to be considered viable who are in state of formation from which,*

though if left alone it be necessarily fatal, relief has been known to be afforded by operation so as to prolong life to the age of maturity or upwards?

To some such doctrine as this the Prussian Code would seem to lean as it does not recognize the non-viability of any child—and is, as we saw above, disposed to consider *crying* as a proof of live birth.

According to the law as explained by the author, the task of the Prussian medical jurist, is so far simplified as regards viability, that his chief duty is to determine the presumed age of the fœtus. Hence he is called on to ascertain and declare whether "it has attained a uterine age of from 180 to 210 days respectively" (p. 11).

The questions regarding survivorship are discussed by the author with great ability, and he prefixes to this chapter the several laws of Prussia and of the Civil Code. There is nothing of essential difference between these and the spirit of the English law, the medical consideration of which is fully discussed in all English works on Jurisprudence.

His further enquiries, into the time at which certain cadaveric changes occur, the order of their succession, and the various effects produced upon different tissues and organs of the body, are replete with interest. We can do little more than note a few of the points of most striking importance. The positive and negative signs of death having been critically detailed, he next alludes to the varying degree of rapidity with which the body cools. This of course in part depends upon the substances, or fluids, with which it is in contact. Another cause, or modifying influence, he also alludes to, viz., the nature of the source of death. As to the asserted long retention of heat in bodies killed by lightning he expresses no opinion: but he says that persons killed by suffocation take a considerably longer time to cool than others. He mentions a case of a fat old woman whose body 30 hours after death was warm internally. Our own experience would lead us to conclude that the bodies of plethoric persons always cooled more slowly than those of of thin people; and that cooling was less rapid in sudden death than when it resulted from chronic disease.

The gradual loss of vital turgidity, as evidenced by the loss of elasticity of the cornea is evident from 12 to 18 hours after death, and may be said to be the first of the secondary results of it: for, the cessation of circulation and breathing; the loss of lustre in the eye; the insensibility to external sti-

muli; the paleness of the body and the loss of heat may be all said to date their commencement from the instant of death. If, therefore, to these be added the symptom just named, we may reasonably infer that the body is more than 12 hours dead. A similar loss of "fulness in the buttocks and calves," &c., next is observed.

After the consideration of these results and post mortem appearances, there is a full and clear description of the method of distinction between ecchymosis from violence, and hypostases from gravitation: and the author suggests incision as a simple and satisfactory test. In ecchymosis this is followed by hœmorrhage, and in hypostases no such result ensues.

Again, the colour of the latter, "varying from a livid or coppery red to a reddish blue," and the fact that they are never elevated above the skin—are additional points of discrimination.

To these follows an enquiry into the condition of blood effused in internal parts: and some curious instances are given of its coagulation after death. Three cases (p. 27) show that coagulated blood was found in the umbilical cord of a still born child, whose lungs sank in water—in the occiput of another—and on the forehead of the third.

The chronology of Putrescence is made the subject of several ingenious remarks, and the influence of air, moisture and warmth, in hastening, or thin absence in retarding it, is duly considered. Cases are also detailed (pp. 50 *et seq*) showing the early period at which putrescence of the lungs occurs—and similarly is shown the long time for which the uterus may retain a recognizable form. This observation applies not only to adult women, but even to a new born infant in whom the organ, though little more than rudimentary in form, was found of a bright red colour, "and was the only organ whose texture was recognizable (p. 55)."

Passing from the consideration of the kinds of violent death, the author enters upon the various instructions necessary to be observed in the conduct of post-mortem examinations and in the framing of reports regarding them. As many of the subjects, here alluded, are not of any very unusual interest, we will only notice a few of them which are of especial importance in ordinary cases. Among these we may allude to *doubtful blood stains on weapons,* and the diagnosis between the blood of birds, cows, sheep, &c., as opposed to that of man.

As to the first of these matters we need scarcely repeat the author's natural caution in warning his readers to be careful to identify blood, before swearing to it; and, secondly, not to conclude that even though blood it must necessarily be a proof of murder.

The murder of an Italian boy some years since was laid to the charge of a tinker who was tried for his life; and who found the presence of bullock's blood on his jacket one of the leading points in evidence against him. It turned out that this blood is used in a part of his trade: and he was eventually acquitted. A very simple test between blood and rust on polished weapons is afforded by heat, which simply causes the former to fall, or come, off as a scale, but does not affect the rust at all. The recognition of the *fibrine* of blood by the microscope, after the colouring matter has been removed from it; and the discovery of crystals of *hæmatine*, are also recommended. The method of distinguishing human blood from that of animals by the odor of the *halitus* given off on application of heat, is justly condemned as uncertain and dangerous. The proofs of this assertion, as contained in the experiments of Chevalier, are alluded to and briefly detailed. A case where it was supposed that pigeons blood was substituted for, or represented as, blood passed per anum by a man is given at pp. 141—142. In this case the decision relieved the sufferer from unjust suspicion.

But greater difficulty was experienced in an attempt to decide as to the blood found on the palm of the hand of a prisoner and represented by him to be that of a cow.

Here although no difficulty exists in discriminating between recent human blood and that of the cow, yet as that under investigation had become thoroughly dry, no decision could be arrived at.

After the discussion of the foregoing and other points of general interest Dr. Caspar proceeds to investigate in detail the various forms of violent death. And in this branch of his enquiry are several very strange instances of the amount of internal injury that may exist without corresponding external signs.

The special considerations to which he devotes separate chapters in this book are:—death from fatal mechanical injuries; death from gun-shot, and death from burning. To the latter of these we shall more fully allude as involv-

ing one or two questions of an interesting character to the general and medical enquirer.

Among the cases of death, as the effect of mechanical injuries there are some of the most opposite characters; some in which the amount of injury done is fearful to contemplate, and others, again, where the most singular and unusual results followed injuries of a kind that might or might not be fatal. Thus *fracture of the mastoid process* was seen in a little girl driven over by a carriage. A similar accident in another produced splitting off of the *squamous portion of the temporal bone and transverse fissure of the occipital into the foramen magnum.* The case of the Virgin, Æt. 70, is interesting both to the Surgeon and the Obstetric Physician (p. 251).

The collection of cases of Gunshot wounds is highly interesting, and though not adding much to our surgical knowledge of these injuries may yet be considered as exemplifying their very dangerous nature One point however deserves to be recorded and that is, that, after considerable experience, the author states—with reference to cases of doubtful nature :—"*No conclusion as to the Suicidal or Homicidal nature of the case can be drawn from the position in which the body shot has been found,*" (p. 282). Of these doubtful cases two very good examples are recorded (Nos. 135 and 136) and in them the guarded opinion given by the expert was confirmed.

The concluding portion of this part is devoted to a consideration of the cause and mode of *death from burning.* To this matter our attention is necessarily directed from the knowledge that fire has been employed on several occasions to effect murder, or to conceal the previous commission of it. The case of Daniel Good must be familiar to all who have had any cognizance of the celebrated criminal trials of modern years. In it the prisoner burned the remains of a murdered woman in order to conceal her death. Here however, the object was one that would have been equally fulfilled by interment or any other form of concealment. The cases in which we have to consider the effects of fire, in a medico-legal point of view are those where the death is referred to fire as its cause. We have however, alluded to *Good's* case because it was the discovery of the imperfectly charred remains of the deceased that caused his apprehension.

"Death from burning" is classed by our author as a

violent death, and he explains the various methods whereby the fatal result is induced. We may thus briefly state the purport of the conclusions drawn by him. The 1st method is where death is caused by "destruction of the dermoid tissues." Here we find *inflammation, effusions of serous fluid,* or congestion of the respiratory apparatus; but in cases of sensitive persons (females and children) and where death occurs from *neuro-paralysis* these symptoms may be wanting. Internal lesions of the stomach are mentioned by Rokitansky as being frequently observed; but the *frequent* occurrence of these is doubted by Dr. Caspar.

The *second* method of production of death is that arising from burns either of great extent, or scattered in small isolated patches. Here death is due to irritation of the cuticular nerves and this irritation would not appear to derive its intensity solely from the extent of surface implicated. For, as the author justly remarks, when it arises from many isolated patches, (even though these collectively amount to but a trifling fraction of the whole body surface of the body) it "both can and does cause very much more "pain and vascular reaction than a continuous burn of a "larger size; and this is no wise lessened by the greater "difficulty of making the applications necessary for promot-"ing healing action." (p. 296.)

The actual extent, therefore, of the burnt surface does not enable us to foresee the result of the injury. This is confirmed by our every day experience, for death by secondary inflammation is always to be apprehended and the probability of this depends, in part at least, upon the situation of the injury.

Thus, in estimating probabilities as to the results of any case we cannot overlook this source of future mischief. In the consideration of burning as a cause of death, in a body discovered without other sufficient cause to explain the occurrence of it, then we are to consider this as its *efficient cause.*

One point, however, is of importance, viz., that we should be able positively to declare whether the body, if so completely destroyed as to be no longer recognizable, has been burned before or after death. Of necessity such complete combustion must be effected *post mortem* and the knowledge of this will sometimes advance us but little in our investigation as to the cause of death. But it is of importance to us

to be able to determine whether such and such results of combustion were produced during, or after, life.

The following is a brief statement of the points to be regarded in the investigation of this question. As arising from burning during life, we observe a red or brownish, coppery red coloration, and a dry parchment like condition of the parts; the hardness and bright color prevent any confounding of them with *post mortem* stains. Or, again, we may find blisters of various sizes, or burst vesications—excoriations of the cuticle. The only mistake likely to arise in this case would spring from these vesications being confounded with the *bullæ of putrefaction.* The presence of a red boundary line; or the reddened base, will enable us to pronounce in favor of the former. To this proof may be added, in certain cases, indications of a reparative process having been set up, and a total absence of that greenish or colourless condition of the skin proximate to phlyctænæ of putrefaction.

Where the destruction of the body is so complete as to expose the contents of the cavities we may be able to inspect the charred remains of the carbonized internal organs.

Besides fire, we know that sulphuric and nitric acids are both capable of destroying living tissues; the former causing a reddish brown, and the latter a yellow, stain. If therefore the question should arise as to whether sulphuric acid or fire produced any burn we should consider the following points—the individual circumstances of each case; the presence or absence of true vesications, and the uniform condition and colour of all patches burnt by acid; on the other hand we may expect in the opposite case to find, soot from burnt clothing, vesications or other known results of fire, or a singed condition of the hair which never results from acids. In addition to these, of course chemical tests would evidence to us the presence of sulphuric acid on clothing, &c.

Following the foregoing general outline, we find a most interesting record of experiments intended specially to test whether or not it was possible to produce vesications on the dead body by application of dry or moist heat. The conclusion arrived at is "*that it is quite impossible to confound a burn inflicted during life with one inflicted after death.*"

The question of *spontaneous combustion* has been lately somewhat popular as a topic of conversation from causes which will be readily recalled by the Reader. The introduc-

tion of this mode of Death, as having occurred in a subordinate character in a popular Novel, having evoked a somewhat angry discussion some few years back. More recently an ingenious correspondent of a London newspaper, lacking the requisite material for his quota of gossip revived an old story, and rebaptising the countess of Von Görlitz, brought her to life and consumed her by spontaneous combustion, to the intense delight of all those who had enlisted themselves under the banner of the author of Bleak House. This little excitement being now over, and the fanciful correspondent of the Times having been exposed, we can turn to the investigation of the matter with a clearer field of enquiry than if it was encumbered with a supposed recent case.

Dr. Caspar is indignantly opposed to the idea of the possibility of this occurrence and his argument is, we think, too convincing to be withstood.

He remarks, that such a thing as spontaneous combustion, has never been seen or examined and that its existence is found to rest alone on perfectly untrustworthy non-professionals or newspaper paragraphs which ridicule and defy every known physical law. The amount of water, (75 per cent.) present in the human body would, as Liebig remarks, disprove the possibility of its self-combustion and complete destruction in a few minutes.

However great the heat to which human bodies have been subjected it has not been sufficient entirely to remove all traces of human form from them. Of this a proof was afforded, as our readers may recollect, by the appearance of the body of the persons who were burnt in the great fire in Tooley Street in June 1861. Here, even when the bodies were exposed to the fiercest heat for days together, they were not wholly reduced to ashes.

The non-ignition of surrounding objects in the so-called "cases" of this occurrence, is opposed to our knowledge of the known property of fire.

Murder may be concealed by the combustion, artificially, of the body, and this is indeed believed to have occurred in several cases represented as spontaneous. But here there has never been any clearer proof, of the asserted spontaneous burning, than could be afforded by a small amount of ashes, for the presence of which no other explanation could be afforded. Yet, in such cases as these to which we refer, the very causation of the ashes might have been made plain

enough if unburnt portions of the body were found in the neighbourhood.

It is the knowledge of this fact—viz., the known incombustibility of the *whole body*—that has suggested this pretence of an unnatural (and we may add *impossible*) death. Here if the body be divided, as has been done, and the great bulk of it removed, a small portion may be readily reduced to ashes and made to play the part of the whole.

If we analyse the *countries* in which this occurrence has been recorded we find 20 cases in France to 1, in Germany, Italy, and America; and 2 in England. On the other hand "*Pyromania*" is found almost exclusively in Germany and rarely in France.

In allusion to this curious feature in the statistics of disease Caspar adds (p. 306.)

"This, then, is a most remarkable circumstance, since pathological essences are not limited by geographical boundaries, and the cause must be sought elsewhere; and it is no less striking a fact, that by far the larger number of all the known cases of so-called spontaneous combustion have been handed down to us from the last or even earlier centuries, and that in the many hundreds of journals of modern times there is scarcely one recent case to be found. We are therefore led to seek for other reasons."

The real and more rational explanation is found in the physical condition—and the special circumstances surrounding—each person thus supposed to be destroyed. The presence of fire in some form in the chamber of the deceased is almost always admitted, the sufferer is old and helpless and the accident occurs during the winter and at night time.

In all these may be found the explanation of the so-called cases. Fire brought into contact with the dress, or bed curtains of the deceased has produced a fire in which they have been destroyed and the frequency of the occurrence is exactly proportionate in the case of France and Germany to the known condition of the usual furniture of beds, and the open or closed condition of the fire stoves! The open fires and bed curtains of France, together with an easily excited mind on the part of the Public, favor the actual or criminal burning of living bodies; while the closed stoves, curtainless beds and less fanciful genius of the Germans exclude the chance of the same occurrences.

We might here remark that if spontaneous combustion is possible, there is no known reason why it should not occur

oftener than is asserted. For, the persons supposed to perish by it are not always reported to have been addicted to alcohol in any form and certainly they were not in any instance considered to be more drunken than their fellow Bacchanalians.

If indulgence in alcohol be a direct cause of spontaneous combustion, how does it happen that in the countries where intoxication is most prevalent it has never been known to occur? And, if heat and alcohol both favor its appearance, can we account for its absence in the Southern (now Confederate) States of America where an almost Tropical temperature is aided by more than Tropical intemperance. How does it happen that the habitual drunkard, who is "hardly ever sober," escapes it?

But above all things, why has it never been witnessed by any one? There is no possible explanation of the occurrence that would prevent its taking place in a crowded ball-room, or in the open street, but not once in all the history of the World has any such thing been ever seen.

Some very interesting facts are recorded, in the form of original cases, by the author the results of which bear more or less on the foregoing questions. From these we learn that the body of a Fœtus, which had for years been saturated with alcohol, was exposed to an intensely hot flame and became immediately ignited—but instantaneously upon the removal of the flame the body ceased to burn—and this was repeated ten or twelve times. Five persons exposed to great and continued heat were perfectly carbonized and all the soft parts burned away but yet their human form was not destroyed and even was sufficiently plain to enable the pelves of opposite sexes to be distinguished.

That the accidental ignition of a man's clothes from an open stove, is sufficient to cause death is proved by case 144, to which is prefixed the striking title "*A Roasted man*" (p. 314). Death from ignition of clothes of Males, Females and Children, is next illustrated in the concluding cases.

To the merits of this book as an original contribution to our knowledge of Forensic medicine we gladly bear testimony: and we look forward with pleasure to the appearance of the concluding portion of it which will embrace, we suppose, the other leading topics of this department of science.

This volume must be regarded as a valuable and judicious addition to the publications of the Society from which it emanates.

The advantage to be derived, by the Reader, from a perusal of this treatise cannot be over-estimated, or too eagerly sought for. In a country situated as India is, where all the cunning of a native mind is but too often directed to the criminal destruction of life; where violation of young girls, and murder by subtle poisons or by open violence are matters of daily investigation; it is essentially necessary that we should be made aware of the most scientific method of investigating the medical and general evidence of crime. To aid us in this we will find a reference to this volume of great value: and from the large number of cases detailed and from the remarks upon them we must derive most valuable assistance.

Hand-book of Physiology. By W. SENHOUSE KIRKES, M.D., F.R.C.P., Assistant Physician to, and Lecturer on the Principles of Medicine at, St. Bartholomew's Hospital. Fourth Edition, London: WALTON AND MABERLY. 1860. Small 8vo. pp. 731.

As a fourth edition of this hand-book was called for, the author very wisely spent his leisure hours in a careful revision of the work; and as his desire was to bring his treatise to a level with the present knowledge of the subject, he has found it necessary to add to, alter, or re-write, several of the chapters.

The work is so well known and so thoroughly appreciated as a trust-worthy guide to physiological knowledge, that it is scarcely necessary for us to do more than point out that the present edition will be found to contain a very good epitome of the best received and more modern doctrines of the science.

The book is purely physiological. It is not burthened with minutely detailed accounts of the structure of organs and tissues; and, in this respect, we consider Dr. Kirkes commendable; for to have introduced such descriptions would have materially increased the bulk of the book, and the numerous excellent works on physiological anatomy which are available, render these details quite unnecessary in a hand-book of Physiology. We are among those who consider that, except with regard to the simplest elements of

biology, an accurate acquaintance with the structure of bodies, organs, and tissues is absolutely necessary to a perfect comprehension of the phenomena which their actions present. And we believe, with reference to all organized beings, that this anatomical knowledge should be completely mastered before entering upon the subject of function, instead of considering the two *pari passu*. And, if we must have hand-books, let us have those of descriptive and general anatomy separate from those which treat of physiology.

In order to show how honestly the author has endeavoured to interpolate in this edition the more recent physiological investigations and conclusions, we give the following extract, which appears as an addendum to the section on the cause of the rhythmic action of the heart.

"Mr. Paget, however, has shown that the cause of the rhythmic motion does not exist equally in all parts of the heart. If, for example, the cut-out heart of a tortoise be divided into two pieces, one comprising the auricles and the base of the ventricle, the other comprising the rest of the ventricle, the former will continue to act rhythmically, the latter will cease to do so, and no rhythmic action can be, by any means, excited in it. Other sections of the heart and experiments of other kinds, seem to show that the cause of the rhythmic action of the ventricle, and probably also of the auricles so long as they are associated with it, is situated about the boundary-ring between the auricles and ventricle; for that which remains connected with this part retains its rhythm, while that which is disconnected from it loses rhythm. They seem to prove, also, that the rhythm does not depend on the properties of the muscular tissue alone or independently, but is derived from the nervous ganglia, as so many centres of rhythmic action, which are chiefly situated in the region named. Why these nervous centres should issue impulses for rhythmic rather than for continuous action, is still a debateable point. The most philosophical interpretation yet given of it, and of rhythmic processes in general, is that by Mr. Paget, who regards them as dependent on rhythmic nutrition, *i. e.*, on a method of nutrition in which the acting parts are gradually raised, with time-regulated progress, to a certain state of instability of composition which then issues in the discharge of their functions, *e. g.*, of nerve-force in the case of the cardiac ganglia, by which force the muscular walls are excited to contraction. According to this view, there is in the nervous ganglia of the heart, and in all parts originating rhythmic processes, the same alternation of periods of action with periods of repose, during which the waste in the structure is repaired, as is observed in most of, if not all the organic phenomena of life. All organic processes seem to be regulated with exact observance of time; and rhythmic nutrition and action, as exhibited in the action

of the heart, is but a well-marked example of such chronometric arrangement. Another interpretation of the rhythmic movement of the heart has been given of late by Dr. Brown-Séquard; he attributes it to irritation produced by carbonic acid in the blood circulating through the muscular tissue of the heart."

And again on the structure of nerves :—

"That there is an essential difference in chemical composition between the central and circumferential parts of the nerve-fibre, *i. e.*, between the axis-cylinder and the medullary sheath, has of late been clearly shown by Messrs. Lister and Turner. (Quarterly Journal of Microscopical Science, 1859.) Their observations, founded on Mr. Lockhart Clarke's method of investigating nervous substance by means of chromic acid and carmine, have shown that the axis-cylinder of the nerve-fibre is unaffected by chromic acid, but imbibes carmine with great facility, while the medullary sheath is rendered opaque and brown and laminated by chromic acid, but is entirely untinged by the carmine. From this difference in their chemical behaviour, the central and circumferential portions of the nerve-fibres are readily distinguished on microscopic examination, the former being indicated by a bright-red carmine-coloured point, the latter by a pale ring surrounding it (see also Kölliker, Manual of Human Microscopic Anatomy, 1860, p. 71). The laminated character of the medullary sheath after treatment with chromic acid is believed by Mr. Lockhart Clarke (Philosophical Transactions, 1859,) to be due to corrugations effected by the acid, and not to its having a fibrous structure as maintained by Stilling (Ueber den Bau der Nerven-primitivfaser und der nerven Zelle, 1856)."

An Effectual and Simple Remedy for Scarlet Fever and Measles: with an Appendix of Cases. By CHARLES WITT, Member of the Royal College of Physicians; and Member of the Royal College of Surgeons, of London. Third Edition. London: JOHN W. DAVIES, 54, Princes Street, Leicester Square, 1862. Pamphlet, 8vo. pp. 31.

THE first edition of this pamphlet was published in May 1858, the second in January 1859, and the third has just appeared. The preface to the first edition commences with the following sentence :—

"The writer of the following pages submits to the notice of his brethren of the profession *and the public*, a medicine which he has

found, from long and varied experience, to be a sure and simple remedy for the cure of scarlet fever and measles."

We have italicised three words to which we have a most decided objection. If Dr. Witt has anything to say to his "brethren of the profession" let him say it by all means, but he should not drag the poor public in to be present at the *séance*. Scarlet fever and measles, as these diseases present themselves in such a climate as that of England, are far too serious matters to be dabbled with by the public, be that public never so intelligent, or have never so over-weening a sense of its capability if judging of things medical.

It is fortunate for the natives of India and for European residents in this country that scarlet fever is almost unknown amongst them, and that measles generally assumes a very mild type. But the reverse is the case in Europe. We have ourselves witnessed numerous epidemics of each disease, and have on many occasions seen death ensue from the primary effects of the poison of scarlatina, before time was permitted for the development of the characteristic rash.

It behoves the practitioner, then, to carefully weigh the evidence that is afforded as to the efficacy of any particular line of treatment that may be recommended in these affections.

The remedy, the merits of which are here advocated, is the *sesquicarbonate of ammonia*. Dr. Witt claims no originality; he owns that he is indebted to the late Mr. Wilkinson for a knowledge of its wonderful effects, and this gentleman derived his information from the late Dr. Peart, who, about the year 1803, published his *Practical Information on the Malignant Scarlet Fever and Sore Throat*, in which the subcarbonate of ammonia was spoken of as endowed with a specific power over that disease. Dr. Witt himself considers that the remedy is "as valuable in these fevers, as the disulphate of quinine is acknowledged to be in intermittent fevers."

In support of this opinion we have the following statements made.

Dr. Peart did not lose one patient from scarlet fever out of nearly three hundred cases, from the moment he employed the sesquicarbonate of ammonia.

Mr. Wilkinson from the moment of the adoption of the remedy to the time of his writing, a space of seventeen years, not only never lost a patient in the above disease, but never had a case of the kind that even appeared dangerous, or gave him a moment's anxiety.

Mr. Ricardo, during the twelve or fourteen years in which he employed the subcarbonate of ammonia, did not lose a single patient out of some hundreds whom he attended in the above diseases.

Mr. H. Jackson, Senior Surgeon to the Sheffield Infirmary, together with his father, who heard of the remedy from Dr. Peart, " used no other treatment for upwards of fifty years, and during that long period he states that only four deaths from scarlet fever had occurred to them. Of these, two were children who died in a room, under the boarded floor of which, open cesspools were afterwards discovered. In consequence of this discovery, an investigation was made in the other two instances, and it was found that the drains, which passed beneath the floor, were open from decay, in several places. In these four cases, it may not be incorrectly said, that death ensued from *drain* fever in a scarlet dress."

The late Dr. Baly considered that by this remedy he had been enabled " to save many patients who he believed would otherwise have died."

Dr. Strahl, of Philadelphia, believes it a real specific for the cure of scarlatina.

And Dr. Reicken, of Brussels, has written " on the surprising effects which he has found it to have over certain epidemics, more especially scarlatina."

After such an array of evidence in favor of sesquicarbonate of ammonia in scarlet fever (and Dr. Witt affirms in measles also), we need scarcely say that we should not hesitate to make trial of it should opportunity occur.

The medicine is to be given *alone*, simply dissolved in water. The dose must be regulated by circumstances, from three to six, seven, or more, grains may be given every hour for the first twenty-four hours, and then either the dose diminished or the intervals increased in length.

Acid drinks and acid fruits must be carefully avoided; pure water may be allowed in unlimited quantity.

Perfect quietude must be enjoined; and the room should be darkened and protected from draughts, as chills are dangerous, but *pure air* must be supplied.

If purgatives are needed, those of the mildest character only should be given. Emetics are decidedly injurious;

and bleeding is still more so. The hot bath is a dangerous experiment.

When the fever has subsided the adoption of a light and nourishing diet becomes important.

The administration of this medicine in these diseases produces sleep, although it possesses no narcotic properties. Headache, cough, and abdominal tenderness cease upon the system being brought under its influence, usually in six or eight hours. If alarming symptoms set in without the appearance of any eruption, the eruption is produced, and the bad symptoms cease. If severe symptoms exist with the eruption in an excessive degree, a diminution of the eruption takes place and the bad symptoms subside. "Even when delay, or peculiarity of constitution, has already occasioned local mischief, the presence of ammonia is found to exert its influence, causing diseased action to subside, or to die off by the removal of its source." And the good effects are manifested equally as well in robust as in debilitated persons.

What is the rationale of the action of this medicine? Dr. Witt says:—

"Do not they [the facts given] show, that shortly after it has been taken, it may be absorbed and mixed with all the circulating fluids of the system; and that by some process of animal chemistry, it has the effect of destroying or of neutralising, the irritating poison with which it has commingled? Non-medical observers have remarked that it seems to *kill* the disease; at least, nature is rendered equal, through this agency, to the task of throwing out the poison upon the surface. The sesquicarbonate of ammonia may be said to act neither as a sedative, nor as a stimulant, but positively as a *specific* or *antidote*—the highest commendation assignable to any medicine."

Further on we are reminded that "ammonia is the *only* known substance capable of preventing the coagulation of the blood when out of the body."

Such is the remedy; such are the recorded successes following its use; such is the mode of its administration; and such is the author's explanation of its *modus medendi*. We commend it to our readers.

Essays and Observations on Natural History, Anatomy, Physiology, Psychology, and Geology. By JOHN HUNTER, F.R.S.; *being his posthumous papers on those subjects, arranged and revised, with Notes: to which are added, the Introductory Lectures on the Hunterian Collection of Fossil Remains, delivered in the Theatre of the Royal College of Surgeons of England, March 8th, 10th and 12th*, 1855; by RICHARD OWEN, F.R.S., D.C.L., Superintendent of the Natural History Department, British Museum; Fullerian Professor of Physiology in the Royal Institution of Great Britain; Foreign Associate of the Institute of France, &c. In two volumes, 8vo. London: J. VAN VOORST, 1861—pp. 403: 507.

THESE volumes are dedicated, as they should be, to all those who are connected with the institution where John Hunter's Museum is deposited, in the following words—"To the Fellows and Members of the Royal College of Surgeons of England, this edition of Hunter's posthumous papers, the preparation of which terminates the editor's labours in making known the thoughts and works of the founder of Philosophical Surgery, is respectfully dedicated."

John Hunter died suddenly on the 16th of October 1793. Wm. Clift was apprenticed to him in Feby. 1792, and, from that date until Hunter died, he was employed every evening "from seven o'clock till eleven P.M., and sometimes an hour or two later," in writing for him; *i.e.*, in making fair copies of the memoranda which the great master wrote "on the slips torn off from the ends, and the blank pages and envelopes of letters." Mr. Clift had these manuscripts left in his charge until 1799, and as he had "no other books to read at that time," he perused the manuscripts, and as he "was not restricted in the least, and thinking there was a great deal of useful information in them," he made large extracts from some of them. John Hunter's brother-in-law and executor, Sir Everard Home, had the M.SS. removed to his house, and, about the year 1823, destroyed the greater part of them by fire.

The Board of Curators of the College of Surgeons was informed by Mr. Clift of the destruction of these papers, and

applied to Sir Everard Home on the subject, and the following was his reply:—

"*Sackville Street, March 9th*, 1824.

"Sir,—I beg you will acquaint the Board of Curators that Mr. Hunter desired that, after his death, his manuscripts should not be entrusted to any body, but were to be destroyed, being in too imperfect a state for the public eye.

"With a view to afford every material that could assist in the formation of the Catalogue, I spent my leizure hours in the Museum for ten years, taking every assistance these papers could afford, and at the end of thirty years, my own health becoming precarious, I closed my executorship by destroying them.

I am, Sir, yours truly,

EVERARD HOME.

"To Mr. Belfour,

Secretary, Royal College of Surgeons."

We feel no surprise at hearing that during the destruction of these papers Sir Everard Home's house "had been nearly set on fire; that the engines came, and the firemen insisted upon taking possession of the house; they saw the flames coming out of the chimney;" for the documents were very voluminous indeed, the Dissections of Animals alone occupying nine folio volumes. What a fortunate thing that Wm. Clift "had no other books to read at that time," and that he used his pen to such good purpose that he alone preserved to the world authentic copies of about one half of the documents which Sir E. Home destroyed. Mr. Owen gives, in an Appendix, a long letter from Mr. Clift, in which that gentleman argues that John Hunter never contemplated the destruction of his M.SS., and never laid any such injunction as Sir E. Home asserts he laid upon his executors, and concludes that "had he made the request at all, he would have little merited the high character which has been almost universally conceded to him."

We make the following extracts from Professor Owen's preface.

"Save in the case of grammatical error, or some very obvious omission, * * * I have rarely meddled with the text; it is here and there obscure enough to test the acumen of a skilled logician to decipher the sense. But it is always a matter of interest to endeavour to make out the meaning of a deep and original thinker; and different minds, unbiassed by any suggestion of the

Editor, may be induced to give their views of Hunter's meaning, and their opinion of his conclusions. It may be interesting also to some, standing on the vantage ground of seventy years' progress, to know what such a self-taught philosopher did not know on the subjects he grappled with ; and a small proportion of the present writings of Hunter may chiefly serve to illustrate his mental peculiarities and shortcomings.

" To those who are conversant with Hunter's style, other testimony of the authenticity of the present writings will be superfluous : and it has seemed to the Editor that the requirements of science would be best met by presenting these writings 'pure and simple,' as Hunter left them. * * *

" Some may wish that the world had never known that Hunter thought so differently on some subjects from what they believed and would have desired, him to think. But he has chosen to leave a record of his thoughts, and, under the circumstances in which that record has come into my hands, I have felt myself bound to add it to the common intellectual property of mankind."

The papers which are printed in these two volumes appear to us to be chiefly monuments to the industry of John Hunter, like his great Museum. That they exhibit a vast deal of original and independent thought there can be no doubt, but here and there we meet with a sentence which causes us to exclaim—Did John Hunter really write this? The following for instance :—

" What is the use of the villous coat of the intestine ? It cannot be for absorption, as many of the surfaces of cavities that absorb copiously are entirely smooth. Is it for sensation ?"—p. 149.

And yet when we come to look into this paragraph we can but be struck with the depth of thought which is here displayed. He had observed the active absorbing powers of certain smooth membranes, and it was not at all unnatural for him to conclude that rough surfaces were non-absorbent.

Again he had observed with reference to the organ of touch that :—

" Although every part of an animal feels, yet the skin and all exposed parts are perhaps the most sensible of the simple impressions of touch* and not only most sensible, but most capable of distinguishing the different impressions, such as roughness, smoothness, heat, cold, &c. However, many internal surfaces are

* Here I would be understood to make a material distinction between the sensation of touch, and irritation to action or pain.

also capable of communicating many of the same sensations, such as the mouth, rectum, and urethra, for we are very sensible in those parts of heat, cold, &c. Nevertheless, we find the superficial surfaces more capable of giving with nicety the superficial structure of bodies than any of the others; and this much more so in some parts than others, such as the skin on the ends of the fingers, lips, glans penis, even the tongue. Perhaps this perfection of touch in some of these parts may in some degree arise from habit; however we find the organ more perfect in those parts than in others, *being covered by a structure which is fitted for the purpose of sensation, called villi,* not of acute sensation, but of delicate, or perhaps more frequently of distinguishing, sensation."

He further observed that there was an increase of this structure in the more sensitive parts; and

"Also in many animals where it was necessary for them to have the parts well defended from external injuries; such as we find in all those animals which have hoofs; there the villi are very long and placed very thick and close."

And as he has recorded these accurate observations, can we, remembering how frequently similarity of structure implies similarity of function, be surprised at his asking with reference to the intestinal villous coat, "Is it for sensation?"

This is not a book to be read straight through, it cannot be consumed at once, but must be sipped at now and then. There are some very curious thoughts and observations in it, but as we trust that all those who really respect and appreciate the Father of Philosophical Surgery will put themselves in possession of the book, we shall here content ourselves with making the following two extracts:—

"*Of parts whose uses are not known.*

"The *capsula renis* is a wrong name for those [suprarenal] bodies, as they are not attached to the kidneys in all animals: in the lizard they are placed between the testicle and epididymis.

"The spleen seems not to have any immediate connexion with life. It can only be classed with the extreme parts of the body; for animals can go on as well, to all appearance, without it, as those that have it. The common use assigned to it seems to have no foundation, as it is of so very trifling a size in some animals. In the lizard it is not half the size of one of the testicles. In fowls it is in the middle of the body, and therefore it cannot be formed for a balance to the liver."

"*Of the progress of the senses, especially taste.*

"It is some time before children are sensible of different sen-

sations ; every thing that strikes the senses is the same ; but by degrees they begin to distinguish and separate one from the other ; first, by the agreeable and disagreeable [impressions.] A new-born child is not sensible of taste ; all tastes are alike : the whole business of a child, at first, is to swallow every thing that touches the lips; nor have they at this time the power of rejection.

"A child laughs when it is but a few days old ; and this cannot arise from any pleasing ideas, as it cannot have formed any ; but it must arise from an agreeable state of body ; not from mere absence of uneasiness, or perfect tranquility, or insensibility, but from a certain irritation that is agreeable, without thought. Some sounds have the same effect at so early an age. Children swallow whatever is put into their mouths, let it be ever so (what we call) ill-tasted ; this shows that taste is some time in forming, and requires a variety of impressions to cause even agreeable and disagreeable tastes, besides, at first children have not the power of rejecting, they gain that by habit."

We fancy we can see the great man jotting down these notes on the backs and sides of letters, and handing them to his apprentice Mr. Clift to be copied out fairly. We heartily thank Mr. Owen for adding these faithful transcripts "to the common intellectual property of mankind."

PART III.

MEDICAL MISCELLANY.

No. 1.—*Sketch of an Individual shewing a wonderful Collection of Tumours, many as black as Melanosis, being most probably simply Hypertrophied Tissue or Cutaneous Out-growths innocent in character:* [*Qu.*] *Molluscum of Systematic writers.* By M. C. FURNELL, Zillah Surgeon, Tellicherry.

THERE are few things more interesting to a medical man than the phenomena of unchecked diseases, so rarely is it, in England that opportunities occur for their observation, and yet I presume in India there is scarcely a station (and in how many other parts where no medical officer dwells) where instances are not to be seen, of loathsome objects martyrs of some complaint, which, if seen earlier, might have been cured or extirpated.

I find two or three such cases, seen in different parts of India in my note book. One, of which I send the accompanying sketch, has in its appearance something so droll and striking, it may perhaps find a niche in the Madras Medical Journal; the man was met with accidently in the bazaar begging, and certainly was the most wonderful being I ever saw.

He was literally covered with small and large tumours, looking more like the knots on an old gnarled oak or the nuts on the Quercus infectoria. The thorax and back were literally studded with small tumours, and one much larger than its neighbours hung pendulous from the back of his head. It was found afterwards, when he came to the Surgery to be examined, that another of much larger size hung from the buttock, as represented in the sketch, but that on the lower extremities the tumours were fewer than on the thorax, until at last the feet and lower portion of the legs were free.

The man was, except as regards the tumours, in admirable health and spirits, obtaining his living as a Faquer,

Mr. Furnell's case of Molluscum(?).

M. C. Furnell del. *W. N. Chipperfield lith.*

and with such a stock in trade he certainly ought to be, and I believe is, a most prosperous beggar.

I was anxious to take one off, more accurately to determine the exact nature of these excrescences, but *no bribe would tempt him to part with even the smallest of them.* The following is the history he gave of himself.

He is a Moplah, about 25 years of age, and was born about 12 miles from Tellicherry; he has been afflicted with tumours ever since a child, but they are now rapidly increasing in numbers and many of them in size. The front of the thorax is literally studded with them; a four anna piece would find no resting place free of tumours. On the other parts of his body, as the back, abdomen and thighs, the skin where free from the excrescences presents small black spots which he asserts (from past observation) will be the seat of future tumours; if so, he is destined to become if he lives even a greater marvel than he now is, for the skin looks as if it had been rained upon with ink.

Yet these tumours—many of them quite black, all dark, are not, at least in my opinion, melanotic, but simply hypertrophied tissue, some resembling ordinary fatty tumours, some like mere warts.

Molluscum is a name which has been applied by systematic writers to a disease which approaches this more nearly than any other I can fix upon, it is called by some Molluscum simplex (Wilson), Molluscum contagiosum (Bateman), Molluscum sessile, subglobulosum, parvum, pisiforme, Molluscum atheroma ochthiasis, Mycosis fungoides.

The word molluscum carries with it no very definite pathological meaning. Dunglison describes the disease "as a cutaneous affection, so called in consequence of its resemblance to certain molluscous animals." The term however springs most probably from the original word itself—molluscus (mollis) soft, nux, Plin, a kind of nut with a very thin shell, for these tumours undoubtedly much more resemble, as we stated above, nuts, or tree excrescences, than mollusca, as in the case quoted below, "Rhemhardt visu foedum, corpus tectum est verrucis *mollibus* sive *molluscis.*"

There is a case cited at length by Wilson, and as it presents in many respects a striking similarity to the one under notice, I may be permitted to quote it and compare the two.

* Case observed by Tilesius. John Godfrey Rhemhardt was born at Muhlburg of healthy parents in 1742. At birth his body was covered with excrescences of small size. When seen by Tilesius in his 50th year, these excrescences varied in size from that of a pea to a pigeon's egg. Their form was various, some being like warts, others oval, others irregular, and others flattened either by the clothes of the patient or by pressure against an adjoining part. The most remarkable of these excrescences was one which was developed from the integument over the ensiform cartilage, it was wallet shaped, tuberculated on the surface, flaccid and hung as low as the umbilicus. Its tuberculated appearance indicates its constitution of several smaller excrescences. The prevailing colour of the tumours is red; here and there one may be seen of a dull yellow or reddish brown hue; they are spongy and soft in texture, and the skin which supports them is dirty looking and earthy. "In medio quarundam maximarum excrescentiarum parvum foramen conspicitur, ex quo nigra corpora oblonga, quæ allius in cute albicantem atque tenerum processum habent, exprimi possunt, quæ vulgo *comedones* appellantur.

"The excrescences are most numerous by the side of the vertebral column, on the thorax, neck, and the sides of abdomen. On the head one has the appearance of an encysted tumour. Regularly every month, some of the tumours become congested and itch greatly, forcing the patient to scratch them violently.

"He is the subject of habitual feverishness, which is increased at each fresh attack of congestion of the tumours, and is accompanied by loss of appetite.

"Rhemhardt is short in stature, has a large head, knees somewhat incurvated, protuberant abdomen, and dull expression of countenance. His position in life is one of indigence and misery. *He has invariably refused to permit the removal or puncture* of one of the tumours, so that their internal structure is entirely unknown."

The man under review is likewise deformed, the shafts of the long bones are bent somewhat, as if in youth he had suffered from Rachitis, but here the physical likeness ends; he is in good health and not by any means in misery, nor is the abdomen protuberant or the head unnaturally large. In Tilesius's case the man invariably refused to

* Wilson on Diseases of the Skin, p. 612.

permit the removal or puncture of one of the tumours. I was remarkably struck with this coincidence on reading the case, which I did after having seen mine, for this man likewise obstinately refused to have one removed.

In the tumours of the case sketched I saw nothing of the "parvum foramen ex quo nigra corpora oblonga, &c. exprimi possunt;" they had to me simply the appearance of soft consistent tumours, irregular in shape and giving the idea of being composed of elastic tissue and not the doughy impressionable feel that atheromatous tumours have: nor did they give vent to any discharge, their colour, as I mentioned above, was darker than the man's complexion everywhere, and in many so black as to suggest Melanosis.

The largest excrescence in Tilesius's case was from the ensiform cartilage and was the size of a wallet. This is a vague definition of size—a wallet might be any size. The largest excrescence in the case I have depicted hung from the buttock or rather over the lumbar vertebræ, and its relative size I have attempted to depict. I regret I did not measure it.

He had however numberless tumours much larger than pigeon's eggs, two for instance on the neck behind, one over his abdomen, and one on the calf of his leg, so that our case may be presumed to have presented larger tumours than even Tilesius's famous case.

No. 2—*Cases in Surgical Practice.* By Howard B. Montgomery, M.D., F.R.C.S.I., &c., Staff Assistant Surgeon, H. M. Madras Army, &c.

1, 2 } Calculi Removed from the Urethra.
3, 4 } Case of Recovery from Incised Wounds of unusual Number and Severity.

I. 2.—*Removal of Calculi from the Urethra.*

In a former paper in this volume (Art VI., page 110) I recorded a case of Urethral Calculus removed from the meatus, and followed by urethritis. I think it well here to add the details of another case of the same disease, but very different in all essential points.

In this instance some doubt naturally arose as to the nature of the disease, and the whole case forms a good example of a very aggravated type of a not very rare occurrence.

In this instance, too, the general rule "not to excise calculi anterior to the scrotum" had to be disregarded. It will also be observed that the tendency of incisions in this situation to degenerate into troublesome fistulæ was not here experienced.

The calculi in these two cases are now in the Pathological Museum of the Madras Medical College.

Gna Lee, a Burman cooly, 42 years of age, married, of slender make but healthy appearance, presented himself to me for examination at the Civil Hospital, Pegu, on the 6th January, 1854. He directed my attention to a hard and perfectly immoveable tumour situated to the left of the raphé on the penis. He did not complain of any pain in it, but attributed to its presence a difficulty in micturition. This had commenced about two years ago, had gradually increased, and had now proceeded so far that every day it became more difficult and was almost wholly prevented on the morning of the day I saw him.

Patient's Statement.—"He could not speak with any "certainty as to dates, but thinks that it is about two years "since he first observed it, then about the size of a *small* "*pea* in its present position. Since that time it has gone "on steadily increasing in size. Its presence at first was "not productive of any difficulty in the discharge of urine "which flowed readily in a full stream and without pain. "But gradually, and especially more recently, the in-"creasing bulk of the tumour gave rise to the several "symptoms to be expected from its presence: and during "the last few months its rapid increase in size induced pain "in passing his urine, discharged in a small stream, which "dribbled away rather than was ejected as it should be. "The larger the tumour grew the more rapidly it increased "in size."

Present state.—The nature of the tumour seemed at first somewhat doubtful—the absence of all pain except during micturition, (when it doubtless arose from the distended condition of the portion of the urethra posterior to the obstruction,) or upon pressure, and the general healthy appearance of the man negatived the probability of the tumour being malignant.

The glands near Poupart's ligament were neither swollen nor painful, and the testes and the other glandular organs seemed perfectly free from disease: yet, the extreme hardness of the tumour, the age of the patient, the gradual growth of the mass and, above all things, the fact of its not *at first interfering with micturition*, favoured the idea of its being a morbid growth originating outside the urethra.

The size of the tumour was about that of an almond, but more globular in outline, and from the known tendency of scirrhous tumour to assume this shape generally (unless altered by pressure in some direction), additional evidence seemed afforded of the possibility of its malignant origin. The centre point of the tumour was about 1¾ inch from the orifice of the urethra; the mass was hard, well defined, and there was no sign of active inflammation *in or around* it. It had moved the raphé from its direct course and diverted it to the right, so that it formed a concavity to the left and a convexity to the right side. The skin covering the tumour was not different in colour from that of the organ generally.

The extreme hardness of the tumour seemed to discountenance the idea of its being of a scrofulous nature. Falling back therefore upon the only remaining alternative, I was induced to believe it most probable that the hardness referred to was dependant on the presence of a large sized calculus which, having by some means become fixed and increasing in size, had produced the difficulty in micturition before referred to; while the greater part of the tumour I believed to be made up of cellular tissue bound together by lymph thrown out as a result of chronic inflammation. I did not then imagine that so large a calculus was present.

Not having a catheter with me on the first occasion of seeing the patient, I directed some palliative treatment and made a partial examination by passing a large probe, rounded at the end, down to the tumour. It glided over it, gave no grating sensation, and failed to indicate in the least the course of the urethra which seemed completely blocked up, and it was impossible to say whether the tumour lay in the urethra or outside it. (This was probably caused by the twisted direction the urethra must have taken to adapt itself to its contents and by the thick coating of mucus which every where covered the stone.)

It became quite apparent to me that perfect retention of urine might at any time occur, and in that case immediate

operation should be had recourse to. If the disease was cancer, then urethral section behind the tumour and subsequent amputation was clearly inevitable, while in the event of its being merely an instance of impacted calculus, incision and extraction became as plainly indicated.

On the following day at 5 P. M., the patient came complaining of complete retention of 12 hours duration and soliciting relief from it. Immediate operation was imperatively called for, as no effort of mine could introduce any catheter down the urethra which was painful and distended with urine. With a view to obtaining confirmation of my previously expressed opinion and ascertaining certainly the presence of a calculus, I determined to examine the tumour from the urethra. Turning the penis upon the abdomen of the patient I introduced a silver catheter (No. 8) into the urethra as far as it would go, namely, a little more than an inch. Then putting the portion of the penis in front of the tumour on the stretch and fixing the tumour I turned the handle of the catheter towards myself when, with a gentle motion, I pressed the beak of the catheter against the upper part of the tumour, and having soon withdrawn it found it had became thereby coated with mucus. Repeating the same measure I soon heard distinctly the grating sound produced by the contact of the catheter and the calculus which was lying in the urethra but perfectly immoveable.

Operation.—I proceeded immediately to operate, which I did by placing the patient on a table, with the nates at the edge of it, the thighs well separated and the knees bent so as to allow the feet to rest on a support put under them. To relieve the extreme distress arising from the pressure on the distended bladder by the abdominal muscles, when the patient lay perfectly horizontally, his shoulders were well raised. Interposing my hand between the abdominal parietes and the penis flexed on them, I grasped the organ so as to put the skin over the tumour on the stretch and then made an incision obliquely from outside and above downwards and inwards. Cautiously deepening this I found when I had reached the tumour that it was surrounded by apparently a strong fibrous capsule, on dividing this by running the back of the point of the knife along the contained tumour and keeping the cutting edge at nearly a right angle with the capsule, I succeeded in dividing the latter in the same direction as, but to a greater extent than, the external opening. The calculus could now be felt plainly

with the finger, but it seemed perfectly impossible to move it. One blade of a pair of forceps was now had recourse to for this purpose, and the lower end of the calculus having been with difficulty raised from its position, was brought through the opening where it remained fixed. The blades of the forceps being now united, the instrument was made to grasp the body of the stone and the whole was removed with some little difficulty, owing apparently to the calculus accurately filling the dilated pouch of the urethra wherein it lay. Almost immediately after the urethra was laid open, the contents of the bladder had been discharged, but no more than a few drops of blood were lost and no vessel, either arterial or venous, required ligature or even pressure.

After treatment.—Cold water dressing was applied to the wound; the patient refused to allow a catheter to be used; some purgative medicine was given and the patient seen to during the night but no hæmorrhage occurred.

Next day (8th Jannary) I passed a gum elastic catheter easily, but with great difficulty induced the patient to keep it in and pass his urine through it.

The following day (9th January) I introduced a full sized silver catheter (No. 8,) and directed it to be kept in for 24 hours, but in my absence the patient removed the instrument. He stated to me on the next visit (10th January) that he passed his urine partly through the meatus and partly through the wound. On the 11th only a few drops of urine escaped by the latter way, and on the 12th none. The wound healed from the bottom and the patient was discharged well on the 20th January. *On the day after he was at work as a cooly.*

During the healing of the wound little could be done except to ensure its cleanliness and keep the wound lightly drawn together with adhesive plaister: it healed principally by the second but partly by the first intention.

On passing the catheter during the last few days of the patient's being in hospital no trace of the operation could be discovered, except that the urethra was sensibly dilated at the seat of the former tumour.

The cicatrix was firm and free from any inflammation on the 16th, and on his discharge little induration remained in the surrounding parts. On examination four months subsequently no trace of the operation could be discovered, except the faint line of cicatrix marking the external incision.

The measurements of the two calculi in these cases and

their chemical composition weights, &c., are perhaps worthy of record. Tighe's calculus ;—5-8ths of an inch long, 1 inch in circumference ; weight 17 grains. Composed of lithates.

Gna Lee's calculus ;—very irregular, about an inch in its longest measurement and nearly 2 inches in circumference. Weight 1 drachm and 7 grains. Lithic acid nucleus, the rest phosphate of lime. As far as I am aware the calculus in the case just detailed is one of the largest ever removed from this part of the urethra. In Tighe's case the calculus was of irregular shape but, in general outline, a flattened oval ; in Gna Lee's case the calculus was somewhat elongated but much more nearly approaching a globular form.

Remarks.—Some years since there appeared, from the pen of Mr. Waring, an able article in the Indian Annals of Medical Science, descriptive of certain customs relative to the practice of medicine among the Burmese. In the paper alluded to, mention is made of the extraordinary fortitude displayed by these people under operation, and after no little practice among them the writer of these pages can fully confirm the statements there made. But once the immediate danger is over they become wilful and independant, and though they are respectful in manner, and I believe most grateful in heart, they will quietly disregard so much of your advice as does not suit their own ideas.

The patient in the foregoing case made two or three attempts to escape from hospital, because we insisted on dressing the wound, and though he would at all times allow me to introduce a catheter for him, *yet he as invariably removed it when I left the ward.*

Hence really he underwent scarcely any professional treatment during the afterpart of his case, yet no untoward consequences followed.

Here I may remark on the extraordinary manner in which the Burmese recover from severe injuries, which in Europeans would be followed by an amount of local inflammation and constitutional disturbance which would almost certainly prove fatal. I could even from my own experience give many proofs of this, but two only will be recorded here.*

* In alluding to these cases I desire to record my sense of the able assistance I derived, in the management of them, from Mr. Barrow (then Assistant Apothecary d. d. H. M. 51st Regiment K. O. L. I.) and Mr. F. B. Pereira (then d. d. 19th Regiment M. N. I.), respectively, two able members of the Medical Department of the Madras Army.—H. B. M.

3. 4.—*Cases of incised wounds.*

On the 15th July 1853 I was requested to go over to the hospital (that of H. M. 51st Regiment K. O. L. I., with which I was doing duty) to see a Burman who had been brought in mortally wounded. I found that the wretched man had been in his boat on the Irrawaddy early that morning, and was conveying some vegetables and other saleable commodities from the left bank of the river to the opposite station of Podangmien. When half way across he was attacked by dacoits who, having severely wounded him, robbed him of all his property and left him literally cut to pieces by their murderous dahls (short swords with wooden handles capable of inflicting most dreadful wounds). Two of the fingers of his right hand were merely left attached by a portion of skin, his left wrist joint was nearly cut through, an extensive wound in the back allowed the lower angle of the scapula to protrude, the ligamentum nuchæ was almost entirely cut through, and all the muscles at the back of the neck were divided. He had besides received twelve other dangerous wounds, and one of these had cut off his left ear which hung on his neck attached merely by a small portion of the lobe, the line of incision being somewhat irregular at this part.

I dressed his wounds, washed and replaced the ear and fixed it by three points of suture; the wrist of the left arm was placed on a flat splint and adhesive plaister and cold water dressing used; the wounded fingers were similarly treated; the gaping wounds in the back of the neck and on the lower angle of the scapula could not be brought together by suture, but they were by plaister. *Within one month every one of the wounds were healed, and the man was perfectly well.* The ear united perfectly but a little crookedly in consequence of some ulceration having detatched the upper point of suture. The wrist retained its mobility and the fingers likewise. The man had no medicine except two or three purgatives.

2nd Case.—In the month of February 1854, a Burmese woman, Æt. 35, was brought in apparently mortally wounded from incised wounds on the back and side of the neck. These had divided the ligamentum nuchæ nearly through, and all the muscles were cut and hacked so as to expose the cervical vertebræ both posteriorly and laterally.

The woman was pulseless from hæmorrhage; she was in the 7th month of pregnancy (her 4th).

She fully recovered without miscarriage or any other mishap, and went her full time and gave birth to a healthy living child after the usual *roasting* practised on these occasions by the Burmese.

The only conclusion to be drawn from the foregoing would be the conviction that Nature will often effect a cure in almost hopeless cases of injuries of this kind.

No. 3.—*A letter on the Febrifuge Properties of the Thevetia Nereifolia*, from Assistant Surgeon G. BIDIE, M.B.

[*Communicated by the Principal Inspector General, Medical Department.*]

To the Secretary Principal Inspector General Medl. Dept., Fort Saint George, Madras.

SIR,

I HAVE the honor to report, for information of the Principal Inspector General, that, in connection with the cultivation of medicinal plants here, I lately made some experiments with the bark of the *Thevetia nereifolia* to ascertain its value as a febrifuge, and that I found it efficient beyond my most sanguine expectations.

The *Thevetia nereifolia*, although thriving well and common everywhere, is not a native of India, and has never, so far as I know, been used in it before as a febrifuge. I have employed a strong tincture of the bark which should be removed from the tree in the hot season and dried in the shade. I have reason to think that it is impaired by being kept long in a dry state. The tincture is made by macerating one ounce of the powder of the dry bark in five ounces of rectified spirits, for eight days, in the usual way, and then filtering.

The tincture is of a beautiful deep sherry colour, and has the peculiar odour of the fresh bark of the tree and a bitter taste. Dose ♏ x. to xv. given as often and with the same precautions as are observed in using quinine.

The cases in which the drug was employed were not selected, but just taken in the order of admission; all however being rejected in which native, or other, remedies had been employed previous to admission. The enclosed table exhibits the number of cases treated, and other necessary

information. The time under treatment not only includes the period during which paroxysms of fever were occurring, but also that of convalescence.

All the cases were truly intermittent, and remembering how obstinate all such fevers contracted here are, the results, although the number of experiments have been but few, lead me to think that I have discovered a febrifuge of no ordinary kind. I shall consider it a duty to report further trials.

I have the honor to be, Sir,
Your most obedient servant,
GEO. BIDIE, M.B.,
Assistant Surgeon,
Public Cattle Depôt.

Hoonsoor, 26*th April*, 1862.

Table of Cases of Fever treated.

No.	Type of Fever.	Number of days under treatment.	Quantity of the Tincture administered.	Result.	REMARKS.
1	Quotidian.	4	ʒ ii.	Cured.	
2	Do.	2	♏ xl.	do.	
3	Tertian.	17	ʒ vi. ♏ xl.	do.	Calomel with Jalap. Pulv. Antim.Co.on admission. Emetic once, and Inf. Justic. Panic. during convalescence.
4	Quotidian.	5	ʒ ii. ♏ xl.	do.	
5	Do.	15	ʒ vi.	do.	Inf. Justic. Panic. during convalescence.
6	Tertian.	14	ʒ iv. ♏ xl.	do.	do.
7	Quotidian.	12	ʒ vi. ♏ xl.	do.	Pulv. Jalapæ. Co. on admission.
8	Do.	4	ʒ i. ♏ xx.	do.	Calomel with Jalap. Pulv. Antim. Co. on admission. Emetic once.

(Signed) GEO. BIDIE, M.B.,
Assistant Surgeon, P. C. D.

Note.—It always affords us much pleasure to give insertion to communications such as the above.

We observe that Lindley mentions *Thevetia* in his list of "Genera altogether undescribed," but it also finds a place in the class Carissæ, order Apocyneæ. He states that "*Thevetia neriifolia* has a dangerous venemous milk; yet its bitter and cathartic bark is reported to be a powerful febrifuge, 2 grains only

being affirmed to be equal to an ordinary dose of Cinchona. The wood of both these [*T. neriifolia* and *T. Ahovai*] has a heavy repulsive odour, and is used in the countries where they are wild, for poisoning fish."

We shall be glad to publish any description, with which Dr. Bidie may feel inclined to favour us of the plant itself, and the peculiar properties of its bark, as well as the results of any further trials which he may have the opportunity of making with the tincture.

We would suggest that in lieu of, or in addition to, the fourth column of the table, the actual quantity of the tincture exhibited at each dose, the length of interval between the doses, and the total number of doses administered should be shown.—ED. *M. Q. J.*

No. 4.—*Cases of Diseases of the Nervous System—Tetanus and Hydrophobia.* By Assistant Surgeon E. EYRE LLOYD, Civil Surgeon, Cocanada.

[TWO cases of disease of the Nervous System, viz., Traumatic Tetanus and Hydrophobia, having come under my care for treatment, I send a few notes of each, with a view to their appearing in the next number of the Madras Medical Journal, should they be deemed of sufficient interest; not that there was anything unusual in the symptoms or novelty of treatment in either of them, but that both being disorders of so intractable and formidable a nature, and recovery from either being almost the exception to the general rule, more especially in cases of the latter, and so much difference of opinion prevailing—one recommending sedatives, another stimulants, another tonics—is my chief inducement in bringing them forward. I am of opinion that if all such cases were published with the treatment employed in each, whether terminating in recovery or death, the diseases in question would get to be better understood and much valuable information gained to the profession. I would suggest that an invitation be given to all who have been fortunate enough to see many such cases to send them to the Editor with a few short notes of symptoms, treatment, and result; and he, I am sure, would willingly arrange and compile them as he thought best fit and give them a place in the Journal. I will now proceed with a statement of each case.]

Traumatic Tetanus supervening on a Case of Compound Fracture of the Tibia.

G —— L ——, Æt. 18.—A French sailor was admitted into the Seaman's Hospital, 1st January 1860, with a com-

pound fracture of the left tibia. It appears that he was at work yesterday morning in the hold of the ship when a heavy spar fell from aloft and alighted on the leg causing the injury in question. As there was much hæmorrhage at the time, the people about him on board attempted to check it by means of burnt charpie and a tight bandage, and he was immediately sent on shore, but from some cause which was not quite clear, he was not brought to hospital till this morning, just as I was leaving after my visit, so that he was allowed to remain at least 24 hours with the tight bandage, and with the fracture unreduced. On admission after the bandage, which was saturated with blood, had been removed and the leg well cleaned, a wound over the middle third of the left tibia was found of about a couple of inches in extent, with a transverse fracture of the bone, not comminuted, neither did the ends protrude externally; he did not seem to suffer much, in fact he appeared to consider it more as a joke, for it was with difficulty that I could get him to answer my questions from laughing, evidently *not* at my bad French; he was unable to speak a word of English.

The leg was put up lightly in splints and cold dressing applied. Spoon diet.

January 2*nd.*—Suffered much pain during the night, unable to sleep in consequence; wound looking puffy, dirty, and inclined to slough.

℞. Haust Purgans; to be taken immediately.
A Cataplasm to be applied to the leg.

7*th.*—Doing well; the swelling and inflammation subsiding; still a small portion of slough to come away; bowels apt to be confined; appetite good; spirits good.

℞. Pil. Rhei. Co. gr. x. at bed time.
Low diet.

10*th.*—The whole of the slough has come away, leaving a large surface of the tibia denuded, but covered with good healthy pus and granulations around. Sleeps well at night; pulse quiet; bowels regular; tongue clean; appetite good.

℞. Acid. Nit. Dil. ℥ i.
Aquæ ℥ i. M. ft. Lotio.
to be applied to the wound.

February 14*th.*—Continued to do well up to this date, when he began to complain of pain and stiffness of the muscles of the neck, which are hard and knotty; finds a

difficulty in opening his mouth; a small spiculum of bone removed from the wound.

℞. Chloroform ʒ i.
Cocoa-nut Oil. ℥ i.
to be well rubbed into the neck 3 times a day.

15*th.*—Better, neck easier, not so stiff or painful. The wound not looking so well; was very restless yesterday; kept getting out of bed, when the Apothecary's back was turned, and hopping about the ward with the aid of a short stick he had got from the other patients, which fully accounted for the altered appearance of the leg.

Continue.

17*th.*—Better as regards the muscles of the neck, but complains of uneasiness in the centre of the back when he moves. On examination there is no hardness or stiffness of the muscles to be felt or observed; has had no spasm.

To apply the Liniment briskly along the spine as well as to the muscles of the neck.

18*th.*—Much as yesterday; complains but slightly of his neck; the uneasy sensation in the back remains, and when he moves feels a stiffness all down the *right* side. He eats and drinks his food well; sleeps at night; tongue clean; pulse natural; there is a listlessness and depression of spirits, however, not at all natural to him.

Continue.

19*th.*—Still complaining of the back and right side from the arm-pit to the knee, which to-day on examination appears to be somewhat rigid throughout; complains somewhat of the left side also, but not nearly to such an extent; neck better, bowels confined.

Hab. Haust. Purg. Stat.
℞ Tinct. Cannabis Indica, ♏ xv.
Aquæ ℥ i. every 4 hours.
Continue the Chloroform Liniment.

20*th.*—Had little sleep during the early part of the night, from the effects of the aperient taken in the morning. Awoke a little after midnight with severe spasms of the jaws, which were firmly closed, which lasted for some few minutes; can now open his mouth and protude the

tongue to a slight extent; has no difficulty in swallowing his food; does not complain so much just now of his neck, but the rigidity of the right side still continues; is unable to move without, as he expresses it, "feeling very tired;" starts occasionally when suddenly spoken to, or touched, with a slight spasm; skin warm and moist; pulse 100, soft; tongue clean; another piece of exfoliated bone removed.

℞ Tinct. Cannabis Ind., ♏ xx.
Mist. Camph., ℥ i. M. ft. Haust.
to be taken every 2 hours.

Continue Cataplasm to the leg, and Liniment to the neck and back.

21*st.*—Continued the draughts regularly during the day yesterday, during which time he had four very severe spasms; managed to get about five hours broken sleep during the night; stiffness of the jaws more marked and the spasms of the muscles of the back more frequent; swallows his food and medicine well; skin warm and bathed in profuse perspiration; pulse 120; bowels open.

℞ Tinct. Cannabis Ind., ♏ xxx.
Mist. Camph., ℥ i, M. ft. Haust.
to be taken away every 2 hours.

22*nd.*—Better; had but two slight spasms during the whole of yesterday; slept nearly all night; expression of countenance less anxious; skin cooler and not perspiring nearly so profusely; pulse 84; tongue slightly coated; bowels open; urine free, copious; raises and moves himself with less fear.

Rept. Haust. Cannabis, every 3 hours.
Continue.

23*rd.*—Slept nearly all night; no spasms since last report, though still complains of slight stiffness of the muscles of the neck, and of an apparent difficulty of disposing of the last drops of any fluid he may be taking; pulse 84; tongue clean; bowels regular; the wound in the leg looking healthy and closing in; no more spicula of bone perceptible.

Cont. Haust. Cannabis every 6 hours.
Continue.

26*th.*—All tetanic symptoms have disappeared; stiffness

of the neck gone; wound still discharging freely; appetite good; sleeps well.

Omit. Medicamenta.

March 5th.—Has been doing well since last report; no spasms whatever; wound decreasing in size; bodily health good. A few days afterwards, there being a vessel in the roads bound for Marseilles, he was discharged from hospital and sent on board.

Remarks.—It will be observed that the subject of this case, a strong, healthy French lad, had been in hospital exactly six weeks when the symptoms first began to show themselves, and which were evidently set up from the irritation produced in the exfoliation of the exposed surface of bone. Feeling convinced after the separation of the slough that exfoliation to a greater or less extent would take place, I applied, in consultation with the Deputy Inspector General of Hospitals of the Division, who happened to be on a visit here at the time, a weak solution of nitric acid in the form of a lotion to hasten the process. The early tetanic symptoms, it will be observed, were greatly relieved by the local application of chloroform in the form of a liniment; but as another spiculum of bone was detaching itself and irritation therefrom again set up, the symptoms gradually increased in severity when I began with the tincture of Indian Hemp, continuing the external application of chloroform; to the combined effects of which I feel disposed to attribute the comparatively mild symptoms and also the successful result; it will be observed that no opiate in any form was given from first to last.

II.—*A Case of Hydrophobia, occurring exactly two months after the incubation of the poison: fatal termination.*

W—— J——, Æt. 6.—I was sent for on the evening of the 11th June, 1860, to see this little child, an East Indian, said to be suffering from hydrophobia which, on reaching the child's house, proved but too true.

The history of the case is as follows:—On the morning of the 13th April he was attacked by a small brown and white pariah dog, which bit him on the right leg just below the knee. A relative, knowing the animal to have been mad, immediately rode off to the Civil Dispensary, a distance of about a couple of miles, and received instructions from the Medical Subordinate there, who armed him

with a piece of Nitrate of Silver, and told him after making a few scarifications with a pen-knife, to apply the caustic freely to the part, which he appears to have done pretty considerably, for nearly a month had transpired before the wound was entirely healed. However he got well and was playing about as usual, and nothing more was thought of it for nearly two months after receving the bite; when, about a week before his death, owing to some heavy showers of rain falling at the time, he was unable to get out of doors, and enjoy the same amount of play and exercise in the open air to which he was accustomed, a peculiar and unusual dulness appeared to come over him, and he was constantly lying down.

On the 5th day of the above symptoms showing themselves, viz., June 9th, he was attacked with fever which lasted for two days, and for which little appears to have been done, when he complained of a "poking" pain in the cicatrix but in which there was no change observable, neither were the parts at all swollen or discoloured. His friends then applied for advice, when the dresser who saw him placed some leaves over the old wound with a view to its being re-opened, and prescribed an aperient in a *fluid* form, which the little fellow was unable to swallow without much pain in the throat and difficulty of breathing; in the latter part of the afternoon he was seized with his first actual spasm when I was asked to see him. He was then, at about 7 o'clock P. M., lying on the ground, perfectly sensible, but with an agitated expression of countenance; eyes wild and staring, wandering about in an excited state as if in search of some imaginary object. I made my way quietly up to him, gently took his hand, and asked him what was the matter, upon which he said, "there is a little *black* mouse that will keep crawling up by my leg and frightening me; here it comes now, hold my hand tight and don't let him hurt me,"—upon which he went off into convulsions which lasted for about a couple of minutes; these recurred about every quarter of an hour if left to himself, but more frequently if in any way excited during the intervals.

The skin was hot and dry, especially that of the head; the pulse quick, but from his state of restlessness I was unable to count it; the tongue was dry and furred. I examined the leg, but did not observe anything unusual in the appearance of the wound, nor did he complain

of any pain in it; he was eating some hard biscuit when I was with him which he seemed to enjoy. Wanting to see for myself what effect the approach of water had upon him, I had a cup brought to me, at the sight of which a sort of terror came over him, and he attempted to move away from me. I endeavoured all I could to re-assure him, and asked him to take a little. He was a sharp, intelligent and tractable child, he said he was *afraid* but would try; he made one or two attempts, but on the cup approaching him he gave a shudder and pushed it away, and afterwards when a little did pass his lips the whole of his body became fearfully convulsed. I stopped with him for some little time watching his spasms, and from the nature of the disease regretted being able to do so little for him; I ordered the application of cold to the spine and having so recently seen the good effects, as I believe, of Indian Hemp in the above case of tetanus I determined to try it in this case also, and prescribed as follows:—

℞. Tinct. Cannabis Ind. ℳ. iii.
Aquæ ʒ. i. to be taken every hour.

I ordered the Dresser to remain in the house during the night to superintend the giving of the medicine and to watch the case, when I left, saying I should be there again in the early morning.

June 12th.—6 A. M.—Just as I was on the point of starting to see my little patient, a note was put into my hand saying that shortly after I left a sort of frenzy came over him; was crawling up and down the room, shouting, grinding his teeth, *attempting to bite* any one who came near him, and, as the note said, "making game at persons, jabbering frightful words and mad talk;" and the fits were almost incessant. He had taken his medicine regularly, but for the last two hours he had become less "troublesome;" the fits much less frequent, and at about 2 A. M. quietly expired from exhaustion.

Remarks.—From the nature of this disorder it may be supposed I had very little hope of saving life in this instance; though some *few* cases have been known to recover, it is almost the exception to the general rule; all *generally* terminating fatally. Having the above case of tetanus in view—a disease so closely allied to this, I felt inclined to try the effects again of the Cannabis Indica, certainly not placing much confidence in the remedy. I did not expect dissolution

to have taken place so rapidly; but the fits increasing so much in severity after I left fully accounted for it. It struck me as a strange coincidence that the spasms should have been preceded by the illusion of a mouse, I don't know that such illusions are at all common; and the great stress laid on the colour of the mouse might have had some allusion to the colour of the dog, but it did not as the notes above show. To those who deny the existence of the disease itself, but who attribute the symptoms to arise from the fears and alarm worked up in the patient, this must be another refutation from the fact of its having occurred in a child so young; one totally ignorant of any such disorder, and who had probably forgotten the circumstance of the bite altogether.

No. 5.—*Notes of a Case in which a Leper was attacked with Small-pox.* By J. Shortt, M.D., Zillah Surgeon, Chingleput.

Mooten, convicted prisoner, Æt. 55, caste toddy-drawer, height 5 feet 3¼ inches, of a robust habit of body. Has a short scattered moustache and no whiskers.

Previous History.—The prisoner was convicted here and sentenced to 8½ years imprisonment with hard labour, on the 8th November 1854. He first came under my observation in June 1857, suffering from the tubercular form of leprosy. His face, trunk, and extremities were covered with tubercles varying in size from that of a marble to a large sized hen's egg.

These ulcerated from time to time, and their contents sloughed away, leaving behind a clean ulcer which readily healed. Suffered from anæsthesia of the extremities attended with weight and numbness.

Patient's Statement.—States that when a child he had an attack of small-pox, face and trunk slightly pitted. Is married and the father of six children, four boys and two girls. On admission in the jail here, he was vaccinated successfully, points to what appear to be four satisfactory cicatrices of vaccination; two years after incarceration in the jail leprosy made its appearance. Is not aware of any member of his family being afflicted with the disease.

Present State.—The whole of the tubercles have sloughed away. The cicatrices are slightly thickened, the sur-

face of the skin is otherwise clean, but wrinkled. The skin about the face, alæ of the nose, and lobes of the ears, is thickened. The little and third finger of the right, and the index and middle fingers of the left, hand are contracted, and their joints considerably thickened. The feet are slightly tumified. Has no feeling in the extremities up to the elbows and knees, nor in the greater part of the skin of his back. Finds his extremities heavy and numb in walking, is subject to frequent attacks of bleeding from the nose.

Has been from time to time under treatment, and of late has improved very much in his health and general appearance, and has become very much stouter than ever I remember seeing him before.

Attack of Varioloid.—On the 18th December 1861, the patient reported sick, complaining of having had fever preceded by ague for the last two days, and this morning an eruption made its appearance on his face in minute papulæ, and in the course of a couple of days there were several on the trunk and extremities, altogether there were not above some 60 or 70 pustules on the patient; a few of the pustules on the 6th were those of genuine small pox, being umbilicated and having the usual brown scale. In a few days these began to scab, and the patient was discharged cured on the 3rd January 1862.

Remarks.—Varicella, or rather a modified form of variola, was prevalent in the jail at this time, and evidently the patient took the disease thus.

There are several points of interest connected with this case—1*st*, the patient had small-pox naturally when a boy, of this there are positive indications from the pitting caused by the disease over his face, trunk, and extremities.

2*nd*.—A great many years after, he was vaccinated on entering the jail, and the patient describes the progress of the vaccination and points to the cicatrices, two on each arm, which exhibit the appearance of genuine vaccine cicatrices.

3*rd*.—The patient now a leper, prior to the appearance of lepra, had taken small-pox naturally, and being subsequently vaccinated successfully, now for the second time takes small-pox in a modified form. Several articles having appeared in the Madras Quarterly Journal of Medical

Science lately on the subject of leprosy, leads me to believe that this case would prove of interest to the profession, shewing as it does that even leprosy will not save a patient from the ravages of small-pox.

No. 6.—*A Fatal Case of Traumatic Tetanus, following the Radical Operation for Reducible Hernia.* By W. J. vanSomeren, M.D., Surgeon, 1st District.

Seenan, aged 26, was admitted into the Native Infirmary on the 14th May, under the head of Dyspepsia.

Present State.—He complained of vomiting two or three hours after taking food, and also of a tendency to diarrhœa. Under a mixture of bismuth, hydrocyanic acid, and infusion of gentian emesis completely disappeared, and diarrhœa did not recur, but the patient became claimant for the cure of a large scrotal hernia on the right side. He had heard of the radical operation for the removal of the condition from which he was suffering, and although from the date of his admission the rupture was easily reducible, and a truss proved quite equal to preventing the descent of the bowel, (despite an extremely dilated condition of the external abdominal ring with shortening of the inguinal canal,)—he still urged that the operation should be performed.

Operation.—Accordingly on the 21st May, in consultation with, and assisted by, Mr. Chipperfield, I operated in the way recommended by Professor Syme. A solid cylinder of wood smeared with an irritant ointment, and with a hole drilled through it near one extremity, was used as the plug for invaginating a fold of the scrotum in the right inguinal canal. A piece of English twine having been run through the aperture in the cylinder, its ends were then passed through the eye of a curved needle in a fixed handle. This was then slipped along the index finger of the left hand, introduced and carrying a portion of integument upon it into the inguinal canal, in front of and above the cord. The needle's point was made to penetrate the abdominal walls first through the external pillar where one end of the twine was freed from the eye, and the needle withdrawn in order to be pushed through the internal pillar of the ring, about three quarters of an inch from the former point of penetration. The other end of the twine having been drawn

out from the eye, the needle was removed and the ends of the twine being pulled upon, the cylinder was lodged within the ring, and the twine tied upon a piece of wood placed over the inguinal canal externally. A compress on the right groin, and a spica bandage, were applied, and the man was removed to his bed.

Subsequent treatment.—The following night he seemed very impatient and restless, removed the bandage, and the next morning I found the gut down behind the plug, although not to the extent that had previously obtained. The hernia yielded at once to the taxis, but as the plug was manifestly insufficient, it was removed and the fold of the scrotum freed. The unguent, composed of the emplastrum mylabris softened with the acetum mylabris, had irritatated the scrotum considerably, and sloughing to a small extent succeeded, and even the points through which the twine had been passed in the abdominal walls were the seat of suppuration.

These local injuries, however, were in themselves trifling, but on the morning of the 26th, the patient complained of some stiffness about the jaws. This alarming symptom awakened our fears of tetanus, and the expression of the man's face together with incipient rigidity of the abdominal muscles only confirmed them. We hoped, nevertheless, that as this formidable disease had scarcely yet declared itself, and was rather threatened than actually developed, the free exhibition of the tincture of Cannabis might prove salutary. It was prescribed in drachm doses every second hour, and gradually increased to two drachms. The bowels were opened freely in the course of the day with a turpentine enema, and the patient's strength supported. These means did not stay the onward progress of the malady, which became fully pronounced on the night of the 26th. The following day, as there was already evidence of flagging in the powers of life, quinine and arrack were prescribed and the cannabis continued, but nothing checked the disease, and the patient died by asthenia on the night of the 27th.

Remarks.—As I am not aware that tetanus has yet been observed to follow the radical operation for reducible hernia, it has appeared to me only right to publish the details of this case. The punctured wounds of the tendinous aponeurosis of the external oblique were doubtless the proximate

cause of the dread disease, and the possibility of such a fatal complication should be considered in weighing the claims of this operation to the approval of the profession. So far as I can learn, the cure does not generally prove a permanent one—indeed permanency is rather the rare exception than the rule, and under these circumstances is it justifiable to incur a risk of which Seenan's case has proved the possibility? Experience hitherto certainly does not encourage the Surgeon to urge the operation on his patient, and my late patient's complication will hereafter make me hesitate to comply with the urgent request of any native of this country, similarly affected, to resort to a similar operative procedure with him. I say any *native of this country* advisedly, because there is so great a tendency in people here to tetanus, especially after injuries of tendinous structures.

No 7.—*Case of Compound Comminuted Fracture of the Cranium, in which the external wound healed, but symptoms of compression occurred three weeks subsequently; Death.* By Native Surgeon M. Iyasawmy, Cuddapah.

Aumeen Bee, Æt. 22, admitted with an elevated cicatrix of scalp extending for 5 inches across the vertex. On examination fracture of the parietal bones was found to exist to nearly the extent of scar, and the anterior portion of skull, at seat of fracture, was on a higher level than the posterior edge.

The patient was brought from Madanapully, about 80 miles distant, and it appeared, from the history of the case (which, however, was by no means clear) that her husband, three weeks before, in a fit of jealousy, dealt her a severe blow with a sharp heavy curved hatchet. She at once fell down insensible and remained in this state for some hours. On the following morning she was able to give her deposition before the Taluq Magistrate. She was treated by the Village Huckeem and the external wound healed.

Present State.—On admission she was quite conscious, spoke collectedly, walked up the steps of the hospital, and, in a word, was in possession of all her faculties. Pulse natural, respiration tranquil, bowels regular.

As there were no symptoms of cerebral disturbance, with the exception of slight headache—which she hardly complained of—and the wound of the scalp being quite healed, it was thought expedient to leave matters as they were. The head being only shaved and cold lotion applied.

Two days after admission, she had a rigor, followed by slight febrile disturbance, for this a purgative and saline mixture were ordered. On the morning of the following day at 5 A. M. patient was found labouring under all the symptoms of compression of the brain. She was in a state of insensibility with loud stertorous breathing. Pupils dilated, pulse slow and rather full.

Operation.—The woman having been laid on the operating table, the cicatrix was laid open throughout its whole length, and the scalp was carefully dissected from the edges of fracture. Very extensive injury of skull was found to exist in addition to the cut through the parietal bones. A fracture was seen to run from each extremity of the cut towards the coronal suture, and another was seen on the anterior portion of right parietal bone. At the left extremity of wound, a pulsating tumour, formed by dura mater and brain, rose up through the gap between the cut bones, and as the anterior portion of the fractured parietal bone pressed upon the tumour, it was sawn off, but no relief to the symptoms followed, and seeing that the injuries were so extensive, further interference was not considered advisable. Patient died a few hours afterwards.

Post-mortem Examination.—The calvaria was removed, the two parietal bones were found cut through nearly 5 inches across. A fracture at each extremity ran down to the coronal suture, and another ran also from the centre of right parietal bone obliquely inwards to the coronal suture. Several detached portions of the vitreous table of the fractured parietal bones were found adhering firmly to the dura mater, requiring some force to remove them. One piece was an inch long and half an inch broad. Six pieces were removed. The brain was very vascular and there was much effusion of turbid serum at base of brain, and in the lateral ventricles.

Remarks.—It is worthy of notice that the immediate effects of the blow, which had produced so serious an injury to the brain and bones of the skull, was, in the first instance, concussion *only*, and that the patient should have lived for

upwards of three weeks without any serious symptoms setting in. It would appear that the symptoms of compression arose from the small tumour of brain being pressed upon by the anterior edge of the fractured parietal bone, and the probability is, that this tumour was of recent date, and that the effusion, which had been gradually forming at the base of the brain and in the ventricles, had forced this portion of brain and dura mater through the gap or fissure of the left parietal bone. On the other hand the detached portions of the vitreous table, although producing little irritation at the time, were of themselves certain, at some period or other, to light up fatal inflammation.

No. 8.—*Case of Typhoid Fever;—Slight Delirium, Partial Paralysis, Difficulty of Speech, Abdominal Tension and Slight Tenderness; No Eruption, Diarrhœa or Hœmorrhage; Death; Commentary; Autopsy; Remarks.* By Surgeon Major J. L. Ranking, H. M.'s 105th Regiment, Madras Light Infantry.

[*Communicated by the Principal Inspector General, Medical Department.*]

Private Charles Turner, No. 2687, H. M.'s 105th Regiment Light Infantry, age 22 years, service 2 years 4 months. Resident at Trichinopoly since 5th October 1860. *Habits*, temperate. *Character*, indifferent.

Medical History.

Date of Attack.	Date of Recovery.	Diseases.	Duration of Diseases.
1861.	1861.		
June 18th.	June 20th.	Febris Intermittent.	3 days
July 9th.	July 11th.	Rheumatism.	3 do.
July 23rd.	August 12th.	Gonorrhœa.	21 do.
August 25th.	Do. 31st.	Orchitis.	7 do.
September 6th.	September 10th.	Febris Continua.	5 do.
October 12th.	November 19th.	Bubo.	39 do.
1862.	1862.		
March 4th.	March 12th	Syphilis Primaria.	9 do.
May 6th.	May 9th.	Ulcus.	4 do.
	Death.		
May 22nd.	May 28.	Febris Typhoides.	7 do.

May 24th, 1860.—Came to hospital last evening with high fever, headache, flushed face, pain in loins, and constipated bowels; tongue furred white with pointed tip and red edges. Attributes it to exposure on the Arsenal guard.

He had six leeches to temple last night and calomel and James's powder, and at day-light took a purgative draught which has operated twice. Skin still hot, face flushed, headache less, pulse 100.

Haust. Salin. ℥ iss. every three hours.

25*th*.—Head better; still feverish; pulse 90; skin moist; four stools from the medicine; slight abdominal tenderness and tension; difficulty in speech, which he says is from sore throat. There is a blush of inflammation in the fauces.

Continue Saline.

(Took Calomel and James's powder last night.)

26*th*.—Still feverish; was poorly last night; slight delirium; a peculiar hesitation in speech as of a drunken man. No headache and no abdominal soreness. Bowels open once yesterday.

A full warm-water enema. A blister to the nape of the neck. Saline mixture during the day.

27*th*.—Fever of a subdued type continues. He was delirious during the night, and the difficulty of speech continues. He answers questions, and says, "there is nothing the matter with him," but he does every thing hurriedly, and there is some rigidity of fingers of right hand, which are closed upon the palm. No apparent paralysis, but an alteration in the expression of the mouth, which is slightly but appreciably drawn to the *right* side. Tongue protruded in the mesial line. Pulse 120; skin above the natural temperature but perspiring; a smell of urine about his bed, but his attendant states that he always asks for the bed pan when he requires to evacuate the bladder; bladder not distended. The blister has vesicated freely.

℞. Hydrargyri Chloridi, gr. ii.
Pulv. Opii; gr. ¼.
every three hours.

Bowels opened freely by the enema yesterday; motions brown, semi-solid feculence. No abdominal tenderness.

Noon.—Much in same state; answers questions in a hurried manner and clips his words; makes frequent attempts

to leave his bed, and says he is quite well. Is not an intemperate man. Pulse 120; tongue furred with red pointed edges; no diarrhœa.

Head to be shaved and cold applied.

Beef tea Oi. in divided quantities every three hours.

Vespere.—Still answers questions, but immediately relapses into a state of unconsciousness and muttering delirium. There is more drawing of the mouth to the right side, and some contraction of fingers of left hand and an unsteady motion of the arm when he tries to use it. Pulse 120, small; tongue inclined to be dry; abdomen tense; has not been moved during the day and has passed no urine; bladder distended. On attempting to pass a catheter I found a malformation of penis (hypospadias), the urethra terminating behind the glans and the orifice so small that an instrument cannot be passed.

A measure of wine directly and every three hours; fomentation to lower belly and a full enema of warm water.

28*th.*—Very ill. Pulse 140; muttering delirium; partial palsy of left arm; picking of bed clothes; cadaverous odour from the body.

Brandy and beef tea as frequently as he can be made to take it.

Noon.—Expired a few minutes ago.

Commentary.—This case on admission (May 24th) presented the features marking the prevalent fevers of the present hot season. The headache, though severe, presented no characters differing from that attending cases of ordinary fever, and yielded to the first application of leeches. The following day however a peculiar hesitation in speech was noticed. The headache was however less and the heat of skin much moderated. Slight delirium was noticed during the night of the 25th and the following day the difficulty of speech was more marked. There was however *no headache*, and the fever was not high. Indeed, but for the affection of the speech, there was nothing to distinguish the case from other cases of fever lying in contiguous beds, some of which presented the abdominal tenderness (which also existed in this case) marking the invasion of enteric fever. On the 27th, alteration in the expression of the mouth, which was drawn to the right side, led me to diagnose

cerebral inflammation involving the membranes at the base of the brain or the brain itself. Calomel and opium was prescribed.

Still there was no headache, and, though the patient was inclined to fall into a condition of muttering delirium, it was quite possible to engage his attention and obtain answers to all questions. On the evening of the 27th it was evident that the powers of life were failing, and wine was ordered to be given liberally with beef-tea at short intervals.

This morning (28th) it was evident that the end was near. There was evidence of palsy of left arm. In his attempt to get out of bed during the night he used his *right* arm and not his *left*; and on my telling him to give me his hand, he gave me his *right* hand but could not lift his left. Picking at the bed-clothes and a cadaverous odour from the bed,—spite of its being possible to rouse the patient and to get him to put out his tongue, &c.—proved that recovery was not to be hoped for.

Autopsy.—At 5 P.M., 5 hours after death. Body not much emaciated, spare only. A good deal of cadaveric lividity of depending regions.

Head.—Scalp congested by gravitation, calvaria removed with some difficulty, owing to more intimate adhesion than natural to dura mater.

Dura mater thickened, rather strongly adherent to arachnoid along the edges of the longitudinal sinus. Sinuses gorged with blood; general venous congestion; arachnoid natural.

Brain—substance firm, of a rose color; puncta vasculosa numerous.

Both lateral ventricles contained about three drachms of bloody serum; veins of choroid plexuses congested. A little bloody serum in the fourth ventricle. No products of inflammation (lymph or pus) at base of brain, and no hæmorrhagic effusion detected in any portion of the brain.

Thorax.—Lungs healthy. Heart with rather large walls, of left ventricle rather thicker than natural. Valves all healthy and muscular, substance of good color. A soft fibrinous clot in right ventricle extending into pulmonary artery.

Abdomen.—Liver natural in color and consistence, and healthy to naked eye inspection.

Spleen large, friable, weight 22 oz.

Kidneys rather course in texture but healthy.

Mesenteric glands enlarged and deeply congested.

Small Intestines.—The lower portion of the ileum extensively ulcerated; the ulcers being large and numerous at the terminal extremity of the gut, irregular in shape with elevated margins and central sloughs. The upper surface of the ileo-colic valve occupied by large ulcers of this kind. In other parts of the bowel ulceration both of the solitary and aggregate glands; a few scattered ulcers of the solitary glands of the large bowel.

Note.—The case then proves to be one of enteric or typhoid fever; a more perfect specimen of the pathological lesion pertaining to this affection could not be desired than that preserved.

The case is a peculiarly interesting one. In the first place, death occurred at an *unusually early period*, on the fifth day dating from the admission of the case into hospital. The deceased was on the Arsenal guard on the 22d, and to this he attributed his illness. The extensive ulceration found in the ileum *must* have been of many days' standing. The deceased then went about his ordinary duties with typhoid ulcerations of the ileum, was able to undertake the somewhat arduous and trying duty of guard and sentry up to within five days of his death, which is quite in accordance with the experience and teachings of recent writers on this affection.

The symptoms referrible to the nervous system were also peculiar. Symptoms of paralysis are not (that I am aware of, stated by any writers as complicating or attending the delirium so rarely absent in this fever, and they certainly withdrew my attention from the abdominal symptoms, which, though marked on the second day, were not so pronounced, subsequently, doubtless owing to the blunting of the sensibility of the patient. There was *no eruption, no diarrhœa* and *no tympanitic distension of the abdomen;* symptoms I am ever on the watch for since I have obtained evidence of the prevalence of enteric fever amongst the men of this Regiment.

No. 9.—*Memorandum of Topics for Investigation by Medical men in India.* By the EDITOR.

OUR attention has been directed by a correspondent in England to certain subjects worthy of being thoroughly investigated by medical men in India: and we can only say with reference to them that we shall gladly give insertion to any communications which may be forwarded to us.

Our desire is to render this Journal the exponent of medical science in India: not only in the part of it within which, chiefly, our readers are to be found. Writers in the sister Presidencies need be under no apprehension that want of personal intimacy, or any feeling of *Presidential rivalry*, will induce us to refuse their contributions. We are fully prepared to increase the size of our Journal to any required extent compatible with avoidance of actual pecuniary loss to meet any requirements occasioned by an increase in the quantity of original matter placed at our disposal.

Among the subjects to which we now specially refer are —Accurate Volumetric Analyses of the Urine in Tropical Fevers and in Hepatic Diseases—Careful observations on the temperature of the body before, during, and after, Fevers and at the critical periods and various stages of them. Observations on this point have led to curious results both in diagnosis and prognosis.

Amyloid degeneration is very frequently found in the bodies of soldiers who have served in the East, and further investigation into the circumstances of its development and the effects of it would be of interest.

The statistics, character, and effects both immediate and remote, of Syphilis in Europeans and Natives open out a wide field for enquiry, and one which has hitherto not been sufficiently entered upon.

These and numberless other matters of professional research are worthy of consideration and would, if fully entered upon, place at the disposal of the profession an amount of information which few could hope otherwise and alone to acquire in a lifetime.

The value of independent investigation on such points by several observers would be still further increased if append-

ed to each paper the author would add a brief summary of "conclusions" or inferences from the results of his own labours.

The comparison of these when completed might possibly enable us to afford *general conclusions* of value as to the nature and source of disease; and thus perhaps eventually tend to its prevention or mitigation in intensity. While, similarly, the results of professional practice would, if fairly stated, yield us a reliable source of information as to the comparative value of the several lines of treatment adopted.

But in all such enquiries authors should remember that to make their communications of the greatest possible value, they should be conducted with a view, not to support any foregone theory of their own but, to enable others to compare the *facts* upon which their conclusions are based.

Our earnest desire to foster a spirit of enquiry into points of vital importance will, we trust, be reciprocated by the willing labours of many of our professional brethren; and we look forward hopefully to their contributions to these pages as a source of much public good and as likely to contribute to their own individual professional reputation and advancement.

METEOROLOGICAL RESULTS *from the Madras Observatory Register for the month of April* 1862.

1862.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometers. Observed Extremes. Maxm.	Observed Extremes. Minim.	Daily means. Dry.	Daily means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·888	90·4	77·0	83·2	76·5	S. S. E.	183	.....	Light clouds.
2nd	·867	91·4	75·2	83·5	76·0	S.	170	.....	Do.
3rd	·862	90·7	75·6	82·9	75·2	S.	158	.....	Clear.
4th	·886	89·8	73·1	81·8	75·6	S.	154	.....	Fine.
5th	·917	88·9	72·6	80·8	73·2	S. S. E.	138	.....	Do.
6th	·922	88·7	70·7	80·5	73·2	S. E.	190	.....	Do.
7th	·881	89·5	71·8	81·3	73·9	S. S. E.	123	.....	Do.
8th	·862	91·1	71·7	81·1	75·6	S.	135	.....	Clouded.
9th	·871	90·4	72·9	82·2	74·9	S.	131	.....	Fine.
10th	·892	92·5	72·3	82·2	75·2	S. S. E.	142	.....	Do.
11th	·928	90·7	72·6	81·8	75·2	S. E.	109	.....	Do.
12th	·941	91·1	72·9	81·0	74·9	S. S. E.	111	.....	Light haze.
13th	·955	91·8	72·3	82·3	75·8	S. S. E.	106	.....	Fine.
14th	·894	90·9	73·8	83·0	76·9	S. S. E.	134	.....	Do.
15th	·835	94·1	76·7	84·8	76·3	S.	177	.....	Haze.
16th	·803	93·2	78·7	84·7	78·6	S.	208	.....	Fine.
17th	·804	93·8	79·7	85·4	79·6	S.	197	.....	Do.
18th	·790	92·5	79·9	85·4	80·5	S.	208	.....	Light clouds.
19th	·777	92·9	80·9	85·4	81·9	S.	238	.....	Fine.
20th	·805	92·0	81·2	85·3	82·3	S. S. E.	232	.....	Flying clouds.
21st	·831	92·1	80·9	85·2	80·9	S. S. E.	212	.....	Do.
22nd	·859	91·7	79·4	83·4	76·5	S. S. E.	166	.....	Light clouds: clear night.
23rd	·858	91·9	75·2	83·6	76·1	S. S. E.	151	.....	Hazy.
24th	·821	93·4	76·0	84·9	77·4	S. S. E.	166	.....	Fine with passing clouds.
25th	·755	93·1	77·9	85·3	79·3	S. S. E.	182	.....	Light haze.
26th	·703	93·5	79·9	86·1	80·8	S.	223	.....	Fine.
27th	·718	92·7	81·3	86·1	81·7	S. S. E.	228	.....	Do.
28th	·737	94·0	81·4	86·4	82·8	S.	224	.....	Hazy.
29th	·742	93·4	81·9	86·2	83·2	S. S. E.	235	.....	Frequently clouded.
30th	·724	92·7	81·9	86·6	84·2	S. S. E.	220	.....	Fine, with occasional clouds.

The Standard Barometer and Thermometers are read at 10 A. M., 4 P. M., and 10 P. M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

Meteorological Results *from the Madras Observatory Register, for the month of May,* 1862.

1862.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometers. Observed Extremes. Max.	Min.	Daily Means. Dry.	Wet.	Wind. Prevailing Direction.	Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·772	93·2	80·9	85·6	82·6	S. S. E.	205	.....	Light haze; fine night.
2nd	·761	93·2	80·6	85·9	79·5	S. S. E.	219	.....	Do. do.
3rd	·783	93·6	80·5	86·4	79·2	S. S. E.	217	.....	Frequently clouded.
4th	·826	93·7	80·7	86·3	78·8	S. S. E.	208	.....	Hazy.
5th	·866	94·7	80·8	86·2	77·9	S. S. E.	196	.....	Cloudy.
6th	·815	91.5	80·3	85·5	78·3	S & NNE	180	.....	Nearly overcast.
7th	·816	87·5	79·2	80.7	74·1	Variable.	151	.....	Cloudy. A slight dust storm from N. E. about 8½ A.M.
8th	·792	86·4	76·1	85·9	77·1	E. S. E.	151	.....	Fine.
9th	·828	93·5	78·7	87·2	78·2	E.	118	.....	Hazy clouds.
10th	·816	93·7	78·7	85·2	77·6	E. N. E.	102	.....	Cloudy.
11th	·766	94·7	78·7	86·6	76·9	E. S. E.	150	.....	Fine.
12th	·712	97·4	80·7	88·2	79·4	S. S. E.	204	.....	Light clouds.
13th	·742	97·9	81·4	89·0	77·1	S. S. E.	200	.....	Do.
14th	·792	101·3	82·7	90·0	79·4	S.	251	.....	Occasional clouds.
15th	·796	100·5	82·8	89·8	78·9	S. S. E.	213	.....	Frequent clouds.
16th	·752	107·0	83·4	87·6	77·5	S.	170	.....	Light clouds, till night.
17th	·721	106·3	81·7	87·8	78·5	S.	207	.....	Light clouds. [cloudy.
18th	·749	103·6	82·4	90·6	79·6	S. S. E.	217	.....	Morning fine. Afternoon
19th	·811	101·4	82·8	88·9	74·8	S.	187	.....	Do. do.
20th	·776	100·9	82·1	89·6	77·6	S. S. E.	209	.....	Fine.
21st	·725	102·2	83·5	89·4	78·5	S. S. E.	287	.....	Do.
22nd	.746	99·3	82·7	89·5	77·8	S. S. E.	306	.....	Hazy.
23rd	·824	95·4	76·9	84·3	79·0	S. S. E.	188	·601	Rain from N. W. about 6 A.M. Fine afterwards.
24th	·829	95·2	81·1	86·3	79·6	S. S. E.	256	.....	Light clouds.
25th	·807	97·6	80·9	87·6	79·6	S. S. E.	217	.....	Fine.
26th	·761	97·8	81·9	89·2	79·8	S. S. E.	222	.....	Do.
27th	·746	97·7	81·9	90·0	79·2	S. S. E.	167	.....	Do. [ning and thunder.
28th	·714	103·7	82·7	89·6	77·0	S.	172	.....	Frequent clouds withlight-
29th	·689	104·1	83·5	90·1	77·7	S. W.	238	.....	Cloudy and threatening. Lightning and thunder.
30th	·675	107·3	82·9	88·3	79·9	Variable.	190	.....	Overcast.
31st	·701	102.1	79·9	90·3	78·2	S. S. W.	234	·002	Do.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

METEOROLOGICAL RESULTS *from the Madras Observatory Register for the month of June* 1862.

1862.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxim.	Observed Extremes. Minim.	Daily Means. Dry.	Daily Means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·752	93·7	73·9	79·6	75·7	Variable.	122	·157	Cloudy.
2nd	·735	96·6	78·2	86·8	79·5	S.	168	·002	Hazy clouds.
3rd	·752	94 9	80·7	87·3	79·6	S. S. E.	186	.....	Nearly fine.
4th	·715	97 0	80·2	87·9	80·9	S.	201	.....	Hazy.
5th	·669	101·3	80·7	88·3	79·8	S.	268	·263	Fine.
6th	·679	102·8	79·1	87·5	78·6	Variable.	210	.....	Changeable.
7th	·700	97·9	73·7	85·1	80·5	S.	201	.....	Nearly overcast.
8th	·732	98·1	80·7	87·5	79·5	S.	231	.....	Light clouds.
9th	·725	101·1	81·5	88·6	80·9	S. S. W.	217	.....	Do.
10th	·691	102·3	82·7	88·0	80·6	S. W.	209	.....	Cloudy.
11th	·668	103·8	82·7	91·7	75·2	W. S. W.	213	.....	Do.
12th	·704	104·1	81·9	90·5	72·3	S. W.	246	.....	Light clouds.
13th	·743	95·1	81·7	87·3	77·8	S. S. E.	215	.....	Do.
14th	·759	101·3	82·5	88·3	76·8	S. W.	181	·002	Changeable.
15th	·749	101·4	82·7	87·0	76·4	S. W.	145	.....	Heavy clouds.
16th	·678	99·3	83·2	88·2	76·9	S. S. W.	212	·571	Threatening and stormy.
17th	·707	94·9	78·2	82·9	77·1	S.	119	·249	Overcast.
18th	·750	90·6	79·7	83·1	74·5	S. S. W.	110	.....	Do.
19th	·756	100·2	80·7	85·9	76·5	W. S. W.	148	·730	[storm about midnight. Flying clouds. Thunder
20th	·747	95·0	76·7	82·7	77·8	S. S. W.	191	1·090	Nearly overcast. Light storm about 7 P.M.
21st	·701	95·8	77·7	86·0	76·6	Variable.	187	.....	Light clouds.
22nd	·672	96·9	78·2	87·2	75·8	Variable.	178	.....	Nearly fine.
23rd	·666	95·9	79·7	87·1	77·0	Variable.	173	·278	Cloudy. Rain about 7 P.M.
24th	·682	100·7	79·7	84·9	77·8	Variable.	157	·011	Cloudy. Light shower at
25th	·679	94·2	79.7	86·5	76·5	S. W.	165	.....	[4 P.M. Nearly overcast.
26th	·651	96·9	80·8	86·3	75·8	W. S. W.	149	·010	Cloudy. Showers at 8 P.M.
27th	·604	100·9	80·7	89·9	76·1	W. S. W.	172	.043	Cloudy. Rain at 7 P.M.
28th	·598	99·9	83·1	91·1	74·9	W. S. W.	185	.....	Nearly overcast. [ers.
29th	·597	99·8	84·1	87·4	75·0	W. S. W.	204	·269	Overcast. Frequent show-
30th	·618	98·4	77·7	88·0	76·0	W. S. W.	156	.....	Overcast. Fall about 6 P.M.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

PART IV.

MEDICAL INTELLIGENCE.

MADRAS MEDICAL COLLEGE: TERMINATION OF SESSION 1861-62.

The Session of this College for 1861-62 closed on the 25th of April, when the usual Annual Meeting was held in the Theatre of the College at 5 P. M.

Previous to the Meeting, His Excellency Sir William Denison, K.C.B., examined the New Museums which are now completed and arranged in almost every particular.

The Anatomical Museum is a well proportioned and lofty apartment with a high Gallery running round three sides of it; the fourth side being in great part occupied by a lofty arch communicating with the department devoted to Materia Medica and Botany. In the former department there is a valuable collection of wax models, and of morbid specimens, both dry and moist. A very beautiful series of Anatomical and Physiological Diagrams, together with a set illustrative of the several orders and families in the Natural History of Animals, are now, for the first time, placed in suitable position. These, together with another series of Henslow's Botanical Diagrams, have been lately presented to the College by one of the Professors, who has also added to the latter 147 botanical drawings executed by native artists under his own supervision. The donor of these valuable and highly ornamental additions to the Museums has received the suitable thanks of Government.

The very valuable Pathological collection of the College is now well displayed, and reflects great credit on the zeal and thoughtfulness of the Medical Officers of the Madras Army, by whom it has been contributed. We trust that they will be able to increase it yet further.

We believe the present Professor of Anatomy is about to prepare a descriptive Catalogue of this department: a similar work in the Materia Medica and Botany division is now in course of preparation. It is hoped that these two works will be published within the next twelve months.

A very comprehensive collection has been made of vegetable substances used in preparing Pharmacopæal medicines, another of Indigenous medicines in repute as such, and of plants used for food; of the various grains, gums, resins and oils of Southern India. The details as to these will appear in the intended Catalogue.

An interesting series of Diagrams of the extinct animals (by Waterhouse Hawkins) is now placed in the Professors' room (the Library), and here, and in other parts of the College, were placed for inspection a set of tabular views of Fossils, Vegetable Products, Fishes, Birds, Entozoa, Reptilia, Mollusca, Arachnida, Crustucea, &c., which have been lent by Dr. Montgomery, but which are to become the property of the College should Government approve of the formation of a Natural History Museum as suggested by him.

We trust that this project may receive the support not only of the Commissioned Medical Officers of the service, and of scientific persons generally; but also of the many Apothecaries and others of the same grade who have been educated within the walls of the College—the usefulness of which would be increased by the proposed collection.

His Excellency having carefully examined the Museums, expressed his approval of the method of their arrangement, and promised to contribute to the Natural History Department some specimens of the Marsupialia of Australia. We trust that it will be our pleasing duty to record similar acts of liberality on the part of the many persons whom circumstances may place in a position to contribute to this valuable addition to the College.

At 5 o'clock His Excellency, accompanied by the Principal of the College, repaired to the Lecture Theatre, where he was met by a numerous assemblage of gentlemen interested in the progress of Medical Education.

We regret that this room should be so entirely unsuited for a public meeting, and hope that a new Theatre may be soon added, so as to render this College complete in its arrangements. The many improvements recently effected in it encourage us to hope that this may yet be accomplished.

Among those present we observed His Excellency the Commander in Chief; the Honorable W. A. Morehead, Esq.; the Bishop of Madras, and his Chaplain, Rev. J. Smith; A. J. Arbuthnot, Esq.; Col. Marshall; Lieut.-Colonel Scott; Lieut.-Col. Carpendale; R. Cole, Esq., Principal Inspector

General of the Medical Department of the Madras Army; J. McKenna, Esq., M. D., Deputy Inspector General Presidency and Centre Division; Surgeons Major J. Sanderson, G. J. Shaw (Bombay Army), Huntly Gordon, Balfour, Porteous, and Duff; J. Urquhart, Esq., M.D., W. R. Cornish, Esq.; Dr. vanSomeren; Rev. Stewart Wright; Major General McCleverty; Captain Villiers; Asst. Surgeons Mason and Whittaker; &c.

Surgeon Major J. Shaw, F.R.C.S., Principal of the College, and Professors Mayer, Blacklock, Paul, M. D., Montgomery, M. D., and Chipperfield, were also present.

His Excellency the Governor having assumed the Chair, Mr. Shaw, F.R.C.S., read the

ANNUAL REPORT OF THE MADRAS MEDICAL COLLEGE—SESSION 1861-62.

1. The Lectures commenced on the 1st of August 1861 and terminated on the 29th March last.

2. The Students are classified into three Departments.

1st. Senior Department.
2nd. Second Department.
3rd. Junior Department.

3. At present there are attached to the College.

Senior Department.	
Private Students	7
Lane Students	2
Government Scholars	2
Second Department.	
1st Class Students	11
2nd do.	8
Third or Junior Department.	
1st Class Students	32
2nd do.	27
3rd do.	28
Total...	117

4. In consequence of the reductions which were taking place in the Army, it was not considered expedient to call in a new class at the beginning of the past Session, consequently there have only been two, instead of three classes in the Second Department. Authority has been given for another class of twenty to be entertained next Session.

5. As some misapprehension exists regarding the constitution of the Madras Medical College, it may be well to point out that it is open, irrespective of creed, color or caste, to all persons of good character seeking a Medical education.

6. In the Senior Department, the period of instruction is extended over five years. During this time the Student receives an education which qualifies him to take a Degree in Medicine or Surgery at the Madras University or elsewhere. No Member of this Department is obliged to enter the service of Government, but he is eligible, should he wish it, to be appointed a Civil Sub Assistant Surgeon; besides this opening there is an extensive and increasing field for private practice for qualified persons not only in Madras, but in many of the large cities of Southern India.

7. In accordance with the requirements* of most of the examining Bodies in Great Britain no student is received into the First Department who has not passed the Matriculation examination either in the Madras or some other University.

* "A certificate will be required of having passed an examination for matriculation, or such other examination as shall in either case from time to time be sanctioned by the Council of this College at a University in the United Kingdom or at a Colonial or foreign University recognised by the Council of the College."

Extract from Regulations of College of Surgeons of England.

8. Admission to all Lectures delivered in the College, with the exception of the Lectures on Medical Jurisprudence, is through the liberality of Government, free to all, the only condition being that students who avail themselves of this privilege shall consent to be amenable to all the Laws of the Institution.

9. The Second Department is for the education of young men qualifying for the grade of Assistant Apothecary, and the Third or Junior Department for the instruction of Candidates for the grade of Hospital Assistant.

10. When the Primary Medical School was transferred from the Vepery Dispensary to become the Junior Department of the College, Messrs. Barrow and Davis, the Medical Tutors, were continued in their appointments. Mr. Barrow has been lately pensioned, and Mr. Davis is dead. The former had been attached to the Primary Medical School since its formation by Mr. Kellie, and it is to Mr. Barrow's excellent mode of tuition that not a little of the success of the experiment is due. Mr. Davis, who had also been connected with the Primary School for several years, was a young man of high attainments and commanded the respect of all. It is not intended to fill up these vacancies, the duties of the Junior department will in future be carried on under the general Superintendence of the Principal, by the present Assistants in the College, and the Students will as heretofore be examined weekly upon the various subjects of study by the Professors.

11. Medical Jurisprudence was taught in its various branches in strict accordance with the instructions of Government. When on this subject, it should not be omitted to notice that at the time the Report for last year was written, I was not aware that the Army and

Navy Medical Boards had lately issued Regulations requiring from all Candidates for Commissions the Double Qualification, *i. e.*, Certificates of not only having passed an Examination in Surgery, but also one in Medicine ; formerly it was only necessary to possess the first.

12. The Secretary of State for India in a Despatch dated 16th July 1861, No. 5, says " I am disposed to approve the abolition, as an experimental measure, of the Professorship of Medical Jurisprudence, but as the Madras Medical College has been recognised by the Royal College of Surgeons in this Country on the understanding that the pupils shall be thoroughly taught in every branch of Medical Science, the result of the change should be carefully watched, and remedy applied, should the arrangements which you have now made, fail to provide for the due instruction of the College Students in Medical Jurisprudence." Although the course of education at this Institution meets all the requirements of the College of Surgeons of England it does not, as has been shown, conform to the recent Regulations of some other Examining Boards, and it is thus possible that a student completing his education here might be placed in difficulty upon his arrival in great Britain.

13. To meet these objections I respectfully recommend that a Professor of Medical Jurisprudence should again form part of the permanent staff of the College. Should Government be pleased to accede to this proposal, I respectfully suggest that Dr. Urquhart be re-appointed. As no Military servant requires certificates of having studied Medical Jurisprudence, it is for the consideration of Government whether the holder of this Chair shall be paid by Salary or Fees.

14. Whilst advocating the re-introduction of a distinct Chair of Medical Jurisprudence, I would recommend that the Professors still continue to incorporate in their Lectures, the more strictly professional points of Medical Jurisprudence, and only touching very generally upon its legal features. This course will tend to impress facts strongly upon the Student's mind and prepare him to benefit, more than he otherwise would, by a systematic course of Medical Jurisprudence.

15. In the last Annual Report it was noticed that by recent Regulations of the College of Surgeons of England, certificates upon more than one branch of Science from one and the same Lecturer, would not be received. I am now enabled to report that in compliance with a representation from this College the Regulation has been modified and it is now ruled* that Lectures on Anatomy and Physiology may be delivered by the same Lecturer, and in like manner those upon Surgery and Clinical Surgery.

* Para. VII, Section III of the Regulations, dated August 1861, vide Appendix.

16. The conduct of the Students has been most satisfactory. No punishment for any thing approaching to serious misconduct has been called for.

Conduct of the Students.

17. The attendance of the Students of the Senior and Second Departments has been without exception most regular, that of the Junior Department has been less so.

Final Examination.

18. The report of the Committee appointed by Government to examine the Candidates for Certificates of Qualification for the public service is given in the Appendix.

19. The Committee report favourably of the general attainments of H. Whitwell, G. Callaghan and C. N. C. Perry. They found after examination that all the Students of the 2nd Department had come up to the required standard, and they were accordingly passed as qualified for the public service. The Committee have appended to the Report a tabulated Form, which shews the results of the exminations in the Classes of Medicine, Surgery, Midwifery and Diseases of the Eye. With one exception all the Candidates for the grade of Hospital Assistants were declared qualified.

Annual Class Examinations by the Professors.

20. The Committee of Professors carried out with their usual strictness these examinations, and the progress of every Student who appeared before them is recorded.

English Class—Junior Department.

21. The Committee of Professors report very favourably of the efficiency of Mr. Watkins and the satisfactory appearance made by his Class, the 3rd or English Class, in the Junior Department.

Johnstone Gold Medal.

22. The Gold Medal has been awarded to H. Whitwell. Few students have left this College with a higher reputation. Whitwell has been invariably at the head of his classes. All connected with the College take a warm interest in his future career, and earnestly hope that the success he has already achieved may act as a stimulus to further efforts to perfect himself in a profession of which it is truly said no one ought ever to cease to be a student.

Class of Chemistry.

23. The Professor says, "Throughout the whole course, Laboratory practice was introduced as far as possible into the lecture room, actual demonstration by experiment repeated by the students, as far as the limited term of one hour would allow, being the constant practice. Pharmaceutical manipulation and a descriptive explanation of all the Chemical processes employed was treated of throughout the course as favourable instances for illustration occurred. On the whole, though the instruction bestowed has been too much broken and divided, the results have not been unsatisfactory."

Class of Anatomy.

24. The Professor of Anatomy gives rather an unfavorable report of the progress of the Military Students of his class. Mr. Chipperfield in his general remarks says, "I have earnestly endeavoured to discover the reasons why the students do not, as a rule, make a progressive advancement in the knowledge of Anatomy and Physiology, proportioned to the greater advantages which each additional year of study offers them. I have conversed with them upon the subject, and one and all agree in the conclusion at which I have arrived, viz. that it is mainly owing to the fact that these branches of study do not form a subject of the final Examination for the grade of Assistant Apothecary that this apparent indifference to Anatomy and Physiology is due. I most respectfully beg that this matter may be borne in mind, and that I may have the satisfaction of knowing that in future this great incentive to study may not be wanting for my pupils. It will be observed that the Private students, generally speaking, hold the first places in the class. This is due, as I have hinted, partly to the good preliminary education they have enjoyed, but principally, according to my notion, to the ambition they entertain of taking degrees, either at the University of Madras, or at some British College, where Anatomy and Physiology are important subjects of Examination."

25. It is not to be denied that the minds of the young men in the Military Department have been somewhat unhinged this year owing to the changes which they see taking place in other Departments, and which they have been expecting will follow in their own; but judging from the readiness and correctness with which many of the students answered the questions put to them at the examinations, at which I was present, and results shown in the record, I do not entirely coincide with the Professor in the unfavorable estimate he has formed of the working of his class; yet the point to which attention has been called will not be neglected, and hereafter it will be laid down that Anatomy and Physiology are to be included not only in the subjects of the Primary, but also in the Pass Examination.—The present system of examination is in accordance with those carried out by the Medical Colleges at home, where there is a First or Primary Examination, and a Second or Pass Examination.

26. The Primary Examinations of the Military Students of the 1st and 2nd year, and of Private and Stipendiary Students of the 2nd, 3rd and 4th years of the Medical College are conducted by a Committee of four Professors, including the Principal and the Professor of the subject of Examination. Each student is separately examined on the subjects which he has studied during the year, every examination being demonstrative as well as oral, and the results are recorded.

27. Formerly, the Student at the conclusion of his course was examined in all the subjects which he had studied since his first ad-

mission into College, so if a military student, he was examined on Anatomy, Physiology, Practical Anatomy, Materia Medica, Chemistry, Medicine, Surgery, Midwifery and Diseases of the Eye ; and if a private or stipendiary student, in addition to these on Botany, Medical Jurisprudence and Hygeine. Under this system students used to idle away their first year at College, and did not set seriously to Anatomy, &c., until their third, or final year, when of course, everything was imperfectly learnt.

28. The second or Pass Examination is conducted by a Committee consisting of a President and two Examiners, they being Medical Officers unconnected with the College, of the Principal of the College, and of the Professor of the subject of examination. This arrangement while it ensures that a certain number of the examiners should have had experience in teaching, sufficiently provides for due strictness and impartiality in the method of conducting the examination.

Class of Materia Medica and Botany.

29. Dr. Montgomery on his return from Europe in January last resumed the charge of his class from Dr. vanSomeren. Dr. Montgomery says: "I desire to record my sense of the very able manner in which this class has been instructed during my absence, and my indebtedness to Dr. vanSomeren and Mr. Wood for the very marked improvement in these boys during that time."

30. The arrangements of this session admitted of the military students having a second course of Materia Medica. The students in this class, with one year's instruction have invariably made a good appearance, this year they acquitted themselves even better than on former occasions. The subject of Materia Medica is one with which the student is more familiar than any other, as from the day he enters an Hospital his education in Materia Medica may be said to commence and the lad comes to College prepared to benefit at once by the Professor's prelections, instead of having to learn a new language as is the case in other subjects of Study. At the same time not a little of this success is due to the very able manner in which the students of this class are taught.

31. The Professor of Botany reports that Chinnapoo and Sethampara, holders of Government scholarships, acquired a very good knowledge of the structure and classification of Plants and their uses, and commends both highly for their diligence and ability.

Class of Clinical Medicine.

32. The Professor states "that the case-reports have been in general creditable to the discernment and industry of the students. These young men have obtained a very fair amount of practical knowledge for the time of their Hospital attendance, but they have

not acquired readiness in using their knowledge and indeed cannot be expected to have that readiness till they have been some years in independent practice."

Class of Surgery.

33. The Professor of Surgery and Clinical Surgery gives a satisfactory report of the progress of his classes. On that important branch of a professional education, Clinical Instruction, Dr. Paul says "a similar course has been followed to that pursued last year. On the admission of a patient he is assigned to the immediate care of two students, one of the Senior and one in the Junior Department. At the first visit thereafter the Junior student first reads the statement of the case he has drawn up, and he is followed by the Senior student. The patient is then examined by any of the other students the Professor may select, and he or other members of the class questioned regarding the symptoms and management of the patient, or the case becomes the subject of the Professor's own remarks. I am confirmed in the opinion I formed of the benefit arising from this mode of conducting the clinical class. Each student has now the benefit of three months' clinical instruction in Surgery and during that time each has an equal number of the patients assigned to his care."

34. "The students attend the clinical classes in divisions which from all not being present at the same time and having different cases to deal with, makes it more difficult to compare their relative merits, but it is impossible that the class could at any one time be present at any Hospital. The patients in hospital are equally divided among these for the time constituting the clinical class, the 1st and 2nd classes being regarded as one and the Junior Department being regarded as a separate class. The number varies of course according to the number of admissions and the number in the clinical class. When the new building is occupied it is to be hoped that there will be a larger field than at present for clinical instruction, as by far the most important Surgical cases now occur in the Civil Dispensary attached to the General Hospital, the morning service of which I have continued to make available for the requirements of the clinical class, indeed without the cases met with there, the service of the General Hospital, would be quite inadequate to the wants of the class of Clinical Surgery. In addition to the ordinary dressing being performed by the students in charge of the case there has been a Bandaging Class on Wednesday evenings."

Class of Midwifery.

35. The Professor of Midwifery has endeavoured to impress upon the Students the most practical points connected with the dangers which may occur at the bedside of the lying-in woman, and has been satisfied with the intelligence and diligence displayed by them.

CLASS OF OPHTHALMIC MEDICINE AND SURGERY.

36. The students have a wide field in the Eye Infirmary for studying the various diseases of the eye, and it is the practice of the teacher to call upon the students to diagnose for themselves all interesting cases, whether they presented themselves as Out-patients, or were admitted into the Hospital, and afterwards to offer such remarks as the case demands.

Museum.

37. The new Museum was handed over to the College last year and many valuable Preparations which were formerly unseen are brought to light, and the splendid series of Wax Models made by Mr. Towne of Guy's Hospital, is for the first time placed where the beauty and faithfulness of their execution could be shown.

38. The completion of the new Museum has enabled the Professor of Botany and Materia Medica to make a very complete collection of Pharmacopœial preparations, and has put him in a position shortly to classify and arrange the valuable collection of Indigenous Drugs received from the Madras Exhibition of 1859.

39. The value of this collection is enhanced by the Professor of Botany and Materia Medica having presented the College with forty original Drawings of Plants useful in Medicine and the Arts. These Drawings are in addition to the numerous splendid Diagrams, which are now suspended upon the walls of the Museum, and the receipt of which it was my agreeable duty to bring to the notice of Government.

State of the Compound.

40. In a communication received from the same gentleman he represents the necessity of having a Botanical Garden and that it should be attached to the College. Dr. Montgomery does not agree with the suggestion in the last Annual Report that it would be advisable to have the Garden in the People's Park. I am not satisfied that a Botanical Garden might not be formed in the Park which whilst meeting the wants of the Botanical Class would at the same time be accessible to such of the Public as take an interest in Botanical pursuits. The Professor's views are fully given in his letter marked No. 2 in the Appendix. In the same letter Dr. Montgomery alludes to the very untidy state of the grounds in immediate proximity to the College, and suggests plans very similar to those which nearly two years ago were laid before the authorities regarding which it was understood the Engineer's Department had received instructions to frame Estimates ; however up to this time nothing has been done.

41. The changes which have taken place in the Junior Department consequent upon the death of Mr. Davis and the resignation of

Mr. Barrow, have necessarily thrown increased labor upon all the Assistants* ; as was to be expected from public servants of their high character their new duties have been cheerfully and efficiently carried out.

* Messrs. Norton, Wilkins, Wood, and Juggennathum.

42. The pay of the Draughtsman has been increased, he as well as the Librarian have given satisfaction.

(Signed) J. SHAW, F.R.C.S.,

Principal of the Medical College.

MADRAS MEDICAL COLLEGE, *25th April,* 1862.

Proceedings of a Committee of Examination of the Students of the Madras Medical College, assembled agreeably to Order of Government, dated 18th March 1862, No. 75.

PRESIDENT.

J. McKenna, Esq., M.D., Deputy Inspector General of Hospitals, Presidency Division.

MEMBERS.

J. Sanderson, Esq., Surgeon Major; W. J. vanSomeren, Esq., M.D., Assistant Surgeon.

OPHTHALMIC DISEASES.

Senior Class of the Second Department.

The Committee having assembled at the Eye Infirmary on the 1st April, proceeded to the Clinical Examination of 11 Senior Military Students in Diseases of the Eye. The same course was pursued as in the preceding year, a case being allotted to each student which he was required to diagnose and describe in writing. The Examination of the papers showed the attainments of four pupils to be Very Good, of three to be Good, one to be Fair, one Indifferent, and one Bad. The youths were subsequently subjected to a *viva voce* test when the answers of five were Very Good, five Good, and one Indifferent.

MEDICINE.

On the 3rd April the Committee assembled at the Vepery Dispensary for the examination of the same students in Clinical Medicine, and the marks obtained by them were as follows.—One Very Good, six Good, five Fair, and two Indifferent.

In the Oral examination on the Practice of Medicine, on the 8th April, at the Medical College, the following were the results :—One Very Good, One Good, Three Fair, Three Indifferent and Three Bad.

The written examination in the practice of Medicine took place on the 12th April, when the papers of two were found Good, Four Fair, and Five Indifferent.

Surgery.

The Committee met at the Civil Hospital on the 5th April, to examine the Students on Clinical Surgery.

The marks were as follows ; Five Very Good, Two Good, Two Fair, One Indifferent, and One Bad.

At the Medical College on the 9th April a 'viva voce' Examination in Surgery was held, when the answers of one student were noted as Very Good, of Seven Good, Two Fair, and One Very Bad. At the subsequent written examination the papers of four were Good, six Fair, and one Indifferent.

Midwifery.

On the 7th April the Committee examined the Students 'viva voce' at the Medical College in Midwifery, when four students passed with Very Good as the value of their replies, Two Good, Two Fair, Two Indifferent, and One Bad.

At the written examination a few days afterwards the results were the following :—One Very Good, Five Good, Two Fair, and Three Indifferent.

The written examinations in all the subjects were conducted as in the previous year, and the Committee consider some of the papers highly creditable to a few of the students. The general attainments of H. Whitwell, G. Callaghan, and C. N. C. Perry are specially worthy of commendation, while H. Tallent is only a little lower in merit than the above named youths.

All the students examined have come up to the required standard, and are accordingly passed as qualified candidates. Their names are entered in the margin.

1. S. Beaver.
2. G. Callaghan
3. R. S. Dawson.
4. T. Dixon.
5. J. Holman.
6. C. Murphy.
7. C. N. C. Perry.
8. P. W. Reeves.
9. H. Smith.
10. H. Tallent.
11. H. Whitwell.

In concluding this Report the Committee beg to append in a Tabular

form the attainments of the students in the several subjects in which they have been instructed.

Tabulated results of the Examination held by the Final Committee upon the subjects of Diseases of the Eye, Midwifery, Medicine, and Surgery.	Very Good.	Good.	Fair.	Indifferent.	Bad.	Very Bad.
Diseases of the Eye	4	3	2	1	1	0
Oral-Ophthalmic Surgery	5	5	0	1	0	0
General Total...	9	8	2	2	1	0
Midwifery	4	2	2	2	1	0
Written Midwifery	1	5	2	3	0	0
General Total...	5	7	4	5	1	0
Clinical Medicine	1	6	2	2	0	0
Practice of Medicine	1	1	3	3	3	0
Written Medicine	0	2	4	5	0	0
General Total...	2	9	9	10	3	0
Clinical Surgery	5	2	2	1	1	0
Oral Surgery	1	7	2	0	0	1
Written Surgery	0	4	6	1	0	0
General Total...	6	13	10	2	1	1

SENIOR CLASS OF THE JUNIOR DEPARTMENT.

This class consisted of 32 students, of whom all, with one exception, have been passed as qualified for the grade of Hospital Assistant.

(Signed) J. McKENNA, M.D.,
Depy. Inspr. Genl. of Hospls.,
Presy. Division.—President.

(„) J. SANDERSON,
Surgeon Major.—Member.

(„) W. J. vanSOMEREN, M.D.,
Asst. Surg., Member.

MADRAS, 19*th April*, 1862.

The Prizes and Certificates were next distributed by His Excellency, according to the following list.

LIST OF PRIZES IN THE SENIOR DEPARTMENT.

Private Student A. E. Dalgairns, a prize for attainments in Medicine.

Private Student W. S. Ranson, a prize for attainments in Medicine.

Private Student S. St. A. Taylor, B.A., a prize for attainments in Anatomy and Physiology.

IN THE 2ND DEPARTMENT.

Apprentice H. Whitwell, a prize for attainments in Surgery, another for Medicine, a third for Midwifery, and a fourth for Diseases of the Eye.

Apprentice C. N. C. Perry, a prize for attainments in Clinical Surgery.

Apprentice R. Hollingsworth, a prize for attainments in Anatomy and Physiology, another for Materia Medica, a third for Surgery, and a fourth for Medicine.

Apprentice B. B. Allan, a prize for attainments in Materia Medica.

IN THE JUNIOR DEPARTMENT.

Native Student S. Vidjeeragavoloo, a prize for attainments in Medicine.

Native Student C. P. Mooneesawmy, a prize for attainments in Surgery.

Native Student M. Paul, a prize for attainments in Anatomy.

Native Student C. Streenavasen, a prize for attainments in Materia Medica.

Native Student Kistnasawmy, a prize for attainments in the Rudiments of the English language.

Students who have received Certificates of qualification as Assistant Apothecary and 3rd Class Hospital Assistant.

1. H. Whitwell.
2. G. Callaghan.
3. H. Smith.
4. H. Tallent.
5. R. S. Dawson.
6. C. Murphy.
7. C. N. C. Perry.
8. T. Dixon.
9. S. Beaver.
10. J. Holman.
11. P. W. Reeves.

JUNIOR DEPARTMENT.

1.	C. P. Moonesawmy No. 624	8.	C. Annammootoo ...No. 625
	S. Vidjeragavaloo... „ 626		C. Andeeappen..... „ 632
	T. Narrainasawmy Naidoo..... „ 569	10.	A. Mooroogasen ... „ 629
	P. Narrainasawmy... „ 623		C. Maunsing..... „ 633
5.	M. V. Shunmoogum „ 575		V. Vencatasawmy Naidoo..... „ 631
	V. S. Ungamootoo.. „ 627		R. Vencatasawmy... „ 636
	C. Veerawgoo ..... „ 628		A. Mahalingum..... „ 573

15. A. Paul ..... No. 635
N. Balasoondrum.... „ 645
J. Solomon..... „ 644
T. V. Vurtharajoolo.. „ 638
Syed Alley ..... „ 634
20. V. Narrainsawmy..... „ 630
Shaik Madar..... „ 639
C. Narrainsawmy..... „ 641
T. R. Dorasawmy..... „ 640
24. E. Daniel.....No. 647
25. V. Mooneesawmy..... „ 642
N. Jevan Sing..... „ 643
A. Mooneesawmy..... „ 648
R. Kistnasawmy..... „ 652
Goolam Nubby..... „ 649
30. A. Gooriah..... „ 650
31. C. Iyaconnoo..... „ 646

Students who have received Honorary Certificates.

Prosector in Anatomy.....H. Whitwell, 2nd Department.
Assistant in the Department of Anatomy..... } J. Legge, „
Assistant in the Department of Materia Medica and Botany... } R. Hollingsworth, „
Assistant in the Chemical Class, Honorary..... } W. Ranson, P. S. Senior Department.
Assistant in the Department of Materia Medica and Botany, Honorary..... } B. Evers, L. S. „
Honorary Prosectors in Anatomy..... } W. H. Boalth, P. S. „ S. St. A. Taylor, B. A., P. S. Department.

Dr. Paul then delivered the following address.

Your Excellencies, My Lord Bishop, and Gentlemen,

At the request of the Principal, I have now, in the fulfilment of a custom which has prevailed for several years at this College, to offer a few valedictory remarks to the youths to whom your Excellency has just presented the College certificate of qualification.

These remarks necessarily must be brief, but I shall endeavour to make them also useful by touching upon some of the future duties and prospects of the young men who have now completed their curriculum.

Passed Apprentices and Hospital Assistants.

I would in fulfilling the duty imposed upon me embrace the first opportunity of congratulating you on the conclusion of your pupilage in this College, and on the honors you have this day attained to. This day marks an important epoch in your lives. From this day you become the servants of the Government, and no longer its eleemosynary pupils. You have attained a position of trust and responsibility from which neither the frowns of your enemies nor

the caprice of your superiors can remove you, so long as you continue to discharge faithfully and zealously the duties imposed on you by the State; and while you continue to do so, you may confidently look forward to spending an honorable life in the position which you or your parents have chosen for you.

There are no students leaving the College this year other than those being educated by the State; but there is nevertheless, I believe, a large field for private enterprize and individual exertion as private practitioners throughout India. This country is at present in a transition state, and it is full time that her youth were hastening to accommodate themselves to the exigencies of the times. Hitherto the State has provided the country with Medical assistance. This cannot have permanence much longer; already, in several places the Government has intimated that medicines are to be supplied to the most poverty-stricken only, and most Civil communities have been recommended to supplement the Government grants to Dispensaries. The day is not far distant, when private practitioners will be required by the many Societies and Companies unconnected with the State, of which there are already several, and likely to be many more. There are at present but few Medical practitioners in this Presidency unconnected with the services of Government, and of these nearly all came from the Western world inspired by Western energy. I have touched on these topics at the out-set of my address because it is a subject on which I would be glad to see some thought bestowed by the rising Medical youth of this Presidency who are ready to clamour against the Government for not forwarding their interests, while they forget that there is a road open to their own energy if they will only follow it.

But I must not forget that I have promised to touch on such points as are likely to be useful to you, and in the selection of these I have been guided mainly by the desire to descant on what I know to be the errors youths leaving College are apt to commit; rather than by any desire to tell you of novelties or to escape from a well trodden path. The first piece of advice I would inculcate on you is to continue students throughout life. Youths leaving College in every country are apt to fancy that dismissed from School or College they are no longer tyros, but accomplished in every necessary attainment, that possessed of the

certificates of qualification, all books and professional questions are to be for ever banished from their thoughts, that, in a word, the close of the College curriculum is the completion of education. Such is peculiarly the rock on which the Indian student wrecks his prospects of being really useful in the practical affairs of life. In the Western world, School and College training is mainly regarded as mental discipline fitting the mind for further development by practical application; but the Indian youth regards his College attainments as perfect, as something he makes no effort to improve upon, as the reason for, not as the means of, his advancement. In our profession especially, no belief could be entertained more inimical to your success as practical men, or one more likely to unfit you for keeping pace with the never ceasing progress of science. To continue students you should endeavour to study the best books, and of these the very best is the *book of nature* at the patient's bedside. If we do not interchange ideas with those who have written and studied the same subjects, we are almost certain of falling into a routine of empiricism and narrow mindedness. The rapid interchange of thought by means of books and periodicals, so that a discovery in any part of the world is known in the course of a few weeks at the antipodes, is the striking peculiarity of the age. So that the sum of information possessed by a well read professional man of the present day is not confined to what he has himself seen, but embraces the experience of the present as well as of bygone ages. But reading alone will not make you proficients, you must think well over what you do read. In the expressive but not very elegant phraseology of the present day, you must *digest* your reading; and above all in Medical reading you must test it by experience, for you will soon find that there is not only much useless, but not a little Medical literature that experience has never confirmed. "Studies," says Bacon, "perfect nature and are perfected by experience, for natural abilities are like natural plants, they need pruning by study; and studies themselves do give forth directions too much at large, except they be bounded in by experience." I might not inaptly describe the mind medical as apt to be carried away by two opposite errors. The first is the absolute neglect of the great storehouses of information—the accumulated writings of ages; and the other the attempting to become physicians by reading alone. The commission of the

one error converts the young student into a mere empiric; the other into a mere book-worm: he who knows nothing of his own knowledge; and he who has no knowledge beyond his own limited experience. It is the happy blending of these you should aim at attaining for "they be the best chirurgeons which being learned, incline to the traditions of experience, or being empirics, incline to the methods of learning."

Secondly, being satisfied in your own minds of the necessity of study to enable you to keep pace with the progress of the day, I would next counsel you to set about forming your *Medical characters.* A young man entering life naturally thinks of what friends he has who could assist him. True friends, no doubt, are useful, but unless you assist yourselves, your friends will not and cannot assist you. I would advise each and all of you to look to yourselves as your best friends, and so to fit yourselves for the position in which you will be placed that your services will be sought after by those who require them, rather than that you should look for advancement to those whom you consider powerful.

The formation of your characters will greatly depend on the mode in which you shall employ the next few years after quitting this Hall, and I hesitate not to predict that he will become the ablest practitioner and the most useful servant of the State, who during that time cultivates most his reasoning powers and who learns to observe for himself. As we pretend to have laid the foundation only of your Medical education, leaving the fabric to be built by yourselves—one of the most useful kinds of training I can suggest to you is reading in connection with important cases you may have under treatment. Cases constantly occur in which there is some feature or symptom that you cannot explain. If you will make it a rule not to sleep till you have found out a satisfactory explanation of the difficulty, you will, I am sure derive much practical benefit. Though the plan may be laborious in the first instance, the comparison of the picture of disease as drawn by others with the symptoms presented at the bed side, cannot fail to make you not only thoroughly conversant with it, but self reliant practitioners.

The third point to which I would advert is, early in life, to *form habits of business and of punctuality.* Method and regularity are of the utmost importance to every man, and to none more than to the Medical man. No one, what-

ever be his special occupation in life, can afford to dispense with method and order. In the discharge of your official duties, certain times will be prescribed by those under whom you will be immediately placed, for carrying out particular duties, but even in carrying out these duties you will find method, regularity and punctuality of the greatest importance. Want of these in the conduct of any business leads to the neglect and the omission of important matters. I could point out instances within my own knowledge where men of great acquirements for want of these essentials in the practical affairs of life, actually fritter away their lives in dreaming of being busy. Some men are born methodical, but all may acquire it in the necessary degree.

The fourth consideration I would put forward is *zeal and earnestness* in your work. Whatever is worth doing at all is worth doing well—therefore, commence life with the determination of doing whatever may be required of you, to the best of your ability. You have only to turn to the Biographies of the great men who have achieved an undying fame for themselves in science to see with what earnestness and perseverance they laboured. I have no wish to undervalue genius or talent—far otherwise. Genius is Heaven's favoured gift, in the possession of very few ; but if talents are not improved, they are but weeds ; while ordinary abilities guided by perseverance seldom fail to produce fruit and flowers. Men, however, of real genius seldom want perseverance. It is known of a painter famous for his easy and graceful touch, that he made no fewer than forty sketches in the composition of one portrait. Turn, in our own profession to the lives of Harvey, the two Hunters, Charles Bell, and of many others I might mention, and learn with what assiduity they pursued their favorite studies. John Hunter was perhaps one of the most profound and original thinkers that ever lived, yet had he never written a page, he has left behind him a monument of industry in his Museum such as no Anatomist or Physiologist has ever raised for himself before or since. Charles Bell spent his life in his Museum or over his pencil. Harvey was occupied for 26 years in making experiments and in bringing to maturity his great work on the Circulation of the Blood, on which his fame rests.

Or will you turn to the history of the Chancellors of England and learn what perseverance and determination Thurlow, Brougham, and Campbell superadded to their own

great talents in their careers of contest for the wool sack. Steady perseverance towards the attainment of any object is an index of mental power, while its opposite indicates the condition of intellectual anarchy: you never heard of a master mind constantly changing the objects of his pursuits, neither did you ever hear of a fickle man attaining lasting reputation.

I must not be understood to recommend your thoughts running always in the same groove or being strictly confined to any single subject, for that leads to prejudice and littleness of mind. Our most celebrated theologians have not been always students of abstract theology, nor have the most famous in the senate or at the bar always confined their thoughts to their own special vocations; so in medicine those most distinguished for their special or Professional acquirements are, as a rule, most noted for their general attainments. But what I counsel is to have a main and special object of attainment in life, and let that object be, the work you have taken in hand. This steady perseverance towards a particular object, I might fairly bring forward as one of the main features of the Anglo Saxon character. It is this very phase of mind that makes the British soldier all but invincible. It is this phase of mind that has led to the nation's greatness. I will trespass on your time with but one more example of perseverance, but it is an extraordinary one—perhaps the most wonderful the history of the world can afford. I mean that of Christopher Columbus, who after he had conceived the idea of sailing Westward in search of a great continent, spent eighteen long years in almost hopeless solicitation on the Courts of Portugal and Spain, amidst poverty, neglect and taunting ridicule, before he was enabled to undertake the voyage which led to the discovery of the New World. Though the prime of his life was wasted year after year in disappointments and delays, such as would have driven most men to despair, yet had he the energy to commence a voyage of discovery in search of an unknown land, and to prosecute it over the trackless ocean where no ship had ever before traversed with a crew mutinous from fear, the polarity of his compass disturbed, and altogether under such adverse circumstances as would have broken the spirit of a less persevering and less dauntless commander.

It has been alleged, and I believe not without some reason, that in India every kind of work is deputed from

its own proper functionary to some one, whom he considers below him in the social scale of life. The Medical Department is perhaps not more immune from this imputation than others. It was a maxim of the Duke of Wellington that whoever wishes to do any particular duty well, should do it himself. To excel in one's avocation is worthy of the highest commendation, and whoever neglects his own duty for any other is equally reprehensible. Therefore do not forget that your own immediate duties have the first claim on your attention, and towards excelling in these, your best efforts and exertions are due.

I will make no apology for next urging on your special attention a *cultivation of the English language.* It is to you a Lingua Franca, at once the channel of knowledge and the means of mental cultivation and refinement. The want of an accurate acquaintance with it was remarked by the Committee at the examinations as militating against several of you. The Native Hospital Assistants especially, I would advise to aim at writing it with simplicity. There is a bombastic verbosity current among you, quite foreign to the spirit of the English tongue, not very intelligible to your hearers, and I fear not always quite understood by yourselves—a spurious and pretentious language made up of long compound words, but feeble when compared with pure English. While enforcing the necessity of a better acquaintance with the English language, let me not forget the claims general information and general literature, especially history, have on your attention. History is a theoretical education in eloquence, in valour, in patriotism,—it is a mirror shewing the rise and fall of nations, the sources of their happiness and their sorrows,—it is a portrait of human character under all its varying phases. General literature will tend to the refinement of your lives, but it often has a direct bearing on your profession. It is only a week or two ago since one of my colleagues was asked, at the Supreme Court here, to give Shakespear's test of Insanity, and Sir Henry Halford in one of his Essays cites an instance within his own personal knowledge, in which he was able to detect the insanity of a patient by that test alone.

The precepts I have hitherto urged on your attention are of a general or intellectual nature, and might, with the substitution of a few words, have been addressed to you whatever had been your profession; but there are certain duties

which attach to the profession you have chosen—moral duties, which I must take the liberty of shortly bringing before you; but before I do so, bear with me a few minutes while I point out, however imperfectly, the scope of our profession.

The field of your usefulness is indeed ample, for I must remind you that your province is not, or should not be, confined to curing the sick or treating actual disease. A great portion of the business of the modern enlightened physician consists in preventing it. You may ask how can we prevent disease? How can we annul the dispensations of Providence? These are in higher hands. Truly often they are; but they are often in our own. The laws that God has assigned to the relations of our bodies with the world in which we live, the laws that regulate our health, the important subject of Hygiene is a very proper field for you—for all who have the requisite knowledge, to labor in. The application of these laws to the conditions of every day life, was too long neglected by our profession, but the subject has not only aroused the attention of the profession, but has urged itself on the public at large. In matters of Hygienic improvement you may individually do much good. Any of you who could persuade the natives in your neighbourhood to ventilate their houses and to be cleanly in their habits deserves well of his country. Filth and want of ventilation have more to do with the outbreaks of cholera and small-pox, and with the immense infantile mortality that exists in the land, than most people dream of. It was the fashion at one time to laugh at Doctors and their Hygienic fears, and a former Municipal Commissioner of Madras went so far as to announce the doctrine that stinks are healthy whatever the Doctors might say to the contrary; but the principle that questions involving the public health can be dealt with only by experts, is admitted now fully in England and throughout the greater part of the continent of Europe, and in this country more attention is daily being paid to their monitions.

Perhaps I could not better illustrate the march of improvement in this, than by a reference to Madras itself. As regards its European population, it is perhaps one of the healthiest cities in the world. Several circumstances contribute to this. They live in large, well ventilated houses, for the most part, situated far apart from each other and from densely populated bazaars, and have,

in the circumstances of their life, little to contend against beyond the heat of the climate ; but you will perceive the European soldier does not live under all these conditions. In the Regiment that has just left Madras, the mortality last year was less, I believe, than in any Regiment in the British Army, whether at home or abroad. Two men only of those located in the Fort died during the year and but one of these from zymotic causes—a degree of health that was never before known in the Regiment quartered in Fort Saint George—due in a great measure to the improvement in the barrack accommodation, effected by the active spirit of Sir Charles Trevelyan, especially to their better ventilation and to the removal of a large number of the men from the rooms downstairs. I must not be understood to say that a tropical climate improves European life—far from it; but I bring forward the instance as one of the improvements in the Hygienic conditions obtained for the soldier by modern, and more just, views of sanitation, and as a striking example, how by judicious measures, even in a tropical climate, which, as foreign to the English-man, must be considered more or less inimical to his constitution, his health may be husbanded and preserved. Hygienic measures on the great scale must be of Municipal or Governmental origin, but much good may be done by individuals by precept and example ; and hereafter any of you may become the advisers of a Department or Municipality for such improvements. A gentleman who once sat where you now are, one of the most distinguished éleves of this College, is at this moment organizing a scheme for the purification of the great drain at the north east angle of the Fort, which I hope at no distant day to see put into practical and efficient operation, and by which I trust that sewer will be no longer offensive to the senses and deleterious to health.

The profession to which you now belong has in all ages been famous for its benevolence and philanthropy. The life-business of its members is to do good to their fellow men, to relieve their distresses and sufferings, to "administer to the mind diseased," to "calm the phrenzy of the burning brain." As courage is the first quality in the soldier, so courage of another kind,—to be exposed, when duty calls you, to infectious diseases—to mix familiarly with the victims of pestilence and disease, will be required of you. With this kind of courage must be combined judgment. In

the language of a living writer the "true physician must enter the sick chamber with a calm intelligence. He is disabled for his mission if he suffer aught to obscure the keen, quiet glance of his science. Age or youth, beauty or deformity, innocence or guilt, merge their distinctions in one common attribute, human suffering appealing to human skill."

The first moral duty, then, that I would urge on you as peculiarly attaching to our profession, is *kindness to the sick of all denominations and all grades.* I have heard it not inaptly said of our profession that if the public is unable to judge of our professional abilities and qualifications, they at least know when we are kind and attentive, and that if they find us kind, they fancy us skilful. This is true, and were I addressing young men about to engage in the struggles of private practice, I could use no argument that your future experience would more surely confirm, than that kindness and attention to your patients are essentially necessary to success. But to young men entering a public service I need commend this necessary duty on no such mercenary grounds. You owe it equally to all who are entrusted to your care. Humanity towards suffering or that sensibility of heart that enables us to feel for the distresses of our fellow-creatures and incites us to relieve them, is the first moral quality requisite in the character of a physician.

Secondly.—*Endeavour to secure the confidence of your patients.* This may be done in several ways. Kindness to patients is one means of securing their confidence; but a physician must often study the temper, and struggle with the prejudices of his patient; hence appears the necessity of a physician having a large share of good sense and knowledge of the world as well as medical learning. The patient's confidence is also gained by shewing him that you are really acquainted with his ailments, by your being able to give him a rational explanation of them; in a word by dealing honestly with him as a sensible man. It is inadvisable at all times, to court discussion with patients regarding their ailments, but one object the sick man has in view in seeking skilled advice, is to know the nature of his disease, its probable course and termination. You are bound therefore to give him an honest and reasonable explanation of his condition should he seek it at your hands. There should be no attempt to mistify him by any learned disquisition on

matters which he cannot comprehend; neither should technical or professional terms be employed except as little as possible. I should however tell you that there are cases, in which it is not desirable to tell a patient of his immediate danger from the shock of such an announcement being greater than his frame could bear; but these cases are rare, and I would advise you in all such never to fail in making his relatives aware of his condition and danger: when a patient is in a fit state to receive such information I think you should not hesitate to give your honest conviction, leaning of course to the hopeful view of the case, when it admits of hope. There may be many circumstances connected with his affairs which, for the comfort and happiness of his family, he would desire to settle, and it is but right that he should have the opportunity of doing so. Patients will occasionally ask you questions which you cannot answer regarding what is to befall them. In these cases never deceive your patient. It is far better to tell him plainly you cannot answer his question, than to hazard any prognostication which you yourself do not expect to occur; for assuredly it will lessen his confidence in your skill if your prediction does not come about. Candour is a quality absolutely required in the medical man, a readiness on the one hand, to acknowledge and rectify his mistakes when he has been wrong, and an admission on the other, that he is but human and his knowledge finite.

Thirdly.—The next moral obligation on which I desire to say a few words, and I feel that very few will suffice, is, that you preserve an *inviolable secrecy in the confidences bestowed on you by your patients.* Many circumstances may be communicated to you in professional confidence, which you ought to remember are for your ear alone, and never to be revealed. Few would like to hear their most trivial ailments being made the subject of tittle tattle in the bazaars, and there are often grave matters involving the happiness and honor of your patients or members of their families which must not be divulged, unless required for the ends of public justice.

Fourthly.—*Temperance and sobriety* are moral qualities required in the medical attendant, whatever may be his position high or low. You, whom I am now addressing, are destined for military employment; in military life intemperance is visited with severe punishment in all ranks,

but in the medical officer, whether in the commissioned or warrant grades, it is an offence that has no palliation or excuse, and in the present day meets with no mercy. The medical officer is always on duty. In-sobriety unfits him for the performance of that duty, so that in truth his indulgence in that vice, in a military point of view, comes under the class of offences that merit and usually meet with the highest punishment.

But I have already trespassed too long on the patience of my hearers. I have left untouched many points in Medical ethics; but I must be done. It only remains for me to tell you in leaving this Hall that you carry with you, the well-wishes of your Teachers who trust, in sending you forth as fruits of this Institution, that you will bear in mind that you hold in your keeping not only your own characters, but in some measure theirs, and that of this College whose certificate you hold. Go then, remembering that you carry with you great responsibilities, that the world knowing you have had a good and solid education, will expect from you not only respectability in your profession, but will look to your bearing yourselves as good citizens, as upright and honorable members of society.

FAREWELL.

25th April 1862.

At the conclusion of this address His Excellency made a few observations in which he congratulated those that had received Prizes and Certificates upon the success they had achieved. He quite agreed with Dr. Paul that when they leave College their education was but commencing. Here the seeds of instruction are sown, which must be developed hereafter. Their success in life mainly depends upon their future exertions. He had no doubt that those who were now going out, would profit by the instructions they have received, and by turning them to good account make themselves useful in their respective spheres.

The Proceedings closed at 6 P. M.

RECENT DONATIONS TO THE MADRAS MEDICAL COLLEGE; PROPOSED INSTITUTION OF A NATURAL HISTORY MUSEUM, &c., &c.

Notwithstanding the intimate connection of Dr. Montgomery with this Journal, we are induced to reprint the following in the hope that the project therein put forward may meet with the support of the profession in India generally, but especially within the limits of this Presidency.

Proceedings of the Madras Government.

Read the following letter from J. Shaw, F.R.C.S., Principal, Medical College; to the Chief Secretary to Government, Fort Saint George, dated 4th April 1862, No. 231.

Dr. Montgomery, Professor of Materia Medica and Botany in the Medical College, who lately returned from furlough on sick certificate, has presented the Medical College with several series of most valuable Diagrams illustrating the Anatomy and Physiology of the human body, also drawings of Extinct Animals, Illustrations of Natural History, and he has in preparation a series of 21 Wax Models from the original moulds made by his father, long Professor of Midwifery in the University of Dublin, and whose loss science has lately had to deplore.

2. These Diagrams will afford the greatest assistance to the Professors in illustrating their Lectures, and are not less remarkable for their beauty than for the correctness of their execution.

3. My colleagues and myself feel that gifts so munificent as those lately bestowed on the Medical College by Dr. Montgomery should be brought prominently to the notice of His Excellency the Governor in Council.

4. I have the honor to enclose the letter from Dr. Montgomery which accompanied the Diagrams, &c.

5. Presuming upon the permission of Government, I am having printed a set of explanatory references to each Diagram.

From Howard B. Montgomery, Esq., M.D., F.R.C.S.I., Professor of Materia Medica and Botany; to J. Shaw, Esq., F.R.C.S., Principal, Medical College, dated Fort Saint George, March 17th, 1862.

Demi-Official.

1. I have the pleasure to forward herewith for the use of the Madras Medical College a Collection of Diagrams, &c., intended to assist the students of the College in their studies.

2. May I beg that they may be accepted as a mark of the deep interest I feel in the prosperity of the Institution with which I have had the honor to be associated for so many years, and of regard for the Professors, whose labours they may lighten.

3. The following brief outline will indicate sufficiently the nature of the Drawings and the advantages they seem to offer to students.

4. The nine large Diagrams, called by the Author Physiological Diagrams, are admirable delineations of the various structures in the human body, and this is effected by life size pictures of the whole body and by magnified representations of the microscopic appearances of its several parts.

5. These Drawings are now in universal use in all the Medical Schools in Great Britain and Ireland.

6. The series of 6 Drawings of "Extinct Animals" may prove of utility should a course of Lectures be at any time given on Comparative Anatomy.

7. For the same purpose, the series of Patterson's Illustrations of Natural History may be employed, and meanwhile they will assist the Lecturer on Physiology and Human Anatomy, in both of which studies constant references to the structure of all Animals are required. They are 10 in number.

8. The 9 Botanical Drawings are the best of any I could find for the purpose of freely illustrating the chief characteristics of the leading orders and classes of the Vegetable Kingdom.

9. All these Drawings are of sufficient size to be easily seen (in their details) by pupils seated on the benches in the Lecture Theatres.

10. I also forward as suitable addenda to the foregoing, a miniature set of the Physiological Drawings for the use of the Lecturer on Anatomy and Physiology, and a copy of Mr. Marshall's popular Compendium, of which they are the illustrations.

11. For the students I also send a printed reference table for each of the large Diagrams.

12. It has long appeared to me to be desirable that in connection with the present Museum a department might be added including the Animal Kingdom, and as a commencement to such a Natural History Museum, I availed myself of a recent opportunity to collect sea birds of the different kinds found at sea in the vicinity of the Cape of Good Hope and within tropical limits.

13. Of these I now send 17 for the Natural History department, and I shall be happy to further increase this contribution by prepared Skeletons of Birds, Animals, &c., should my proposal be favorably received as regards the institution of a Natural History Museum.

14. To aid in this project, I present to the College a copy of Patterson's Classification of Animals which would (if adopted) cause the collection to be classified in accordance with the plan adopted in the Diagrams alluded to in paragraph 7 of this letter.

15. I have no doubt that if this proposal is carried into effect many of the students of the College would assist in procuring and preparing specimens, and that the Medical Officers of Her Majesty's British and Local Armies would willingly assist in it.

16. A large and very valuable collection might be thus brought together at very trifling cost, and it would tend to supply a very prominent want in our present system of Medical Education.

17. Comparative Anatomy is now one of the fixed subjects of study, attendance upon which is required by most of the Licensing bodies at Home, and our students may be put to expense both of time and money if they find attendance on such a course necessary before presenting themselves for professional examination in England.

18. I may add that I shall be happy to assist this project in any way.

19. I have also to solicit permission to present *for the use* of the College a series of 9 framed engravings and of paintings illustrating various points connected with the diseases of women and children. These drawings are from the collection of my father, the late Dr. Montgomery of Dublin, by whom they were used for many years in illustration of his Lectures on those subjects in the University of Trinity College, Dublin.

20. I trust I may be permitted to add that I should desire *these* to be considered as only *lent* to the College, as I am unwilling to part with the possession of articles in which for his sake I am interested.

21. In case however of my failing to recall them they are to become College property.

22. I also present in this department 3 copies of the chief pamphlets published by himself on matters connected with Obstetric Medicine and Surgery. These pamphlets are reprints from various publications, few of which are to be found in the College Library. Should I hereafter make a more complete collection, copies of it shall be sent to the College.

A very complete set of 21 Wax Models, the originals of which were prepared by my father, and of which only one set exists, is also placed at the disposal of the Professor of Midwifery.

The originals are only to be found in the "Montgomery Museum," Queen's College, Galway, for which they were purchased with the rest of the Museum by Her Majesty's Government in 1858.

ORDER THEREON, 16th April 1862, No. 105.

The Government highly appreciate the warm interest evinced by Dr. Montgomery for the prosperity of the Medical College, and desire that their best acknowledgments may be conveyed to him for the very useful and valuable collections of Diagrams, &c., recently presented by him to the Institution.

2. The Government approve of the Principal having a set of explanatory references to each Diagram printed.

PRECAUTIONS AGAINST CHOLERA.

We gladly re-print the following admirable order by His Excellency Sir Hugh Rose, K.C.B.

Head Quarters, Simla, 7th April, 1862.

1. Officers commanding divisions, stations, &c., will make themselves thoroughly acquainted with the ground in the neighbourhood of their stations to the extent of 20 miles, with a view to at once selecting sites for encampments in the event of cholera appearing, and care will be taken to ensure these places being always kept in a fit state for occupation by troops, and with a sufficient supply of wholesome water available on each.

2. The Officers of the Quarter Master General's department of each division will prepare a plan of the required extent of country, with the different encamping grounds marked on it, so that when the disease approaches, measures may be at once taken to place the Troops under canvas without delay.

3. On the outbreak of cholera in an epidemic form, either in neighbouring villages or cantonments, Officers commanding stations will be prepared to move the Troops into the selected camps on the shortest notice.

4. As soon as any case of cholera is reported in the station, the Troops will be moved into camp, and no unfavorable condition of the weather is to prevent this movement being carried out.

5. The Force will be broken up into as many detachments as the number of the Medical Officers will admit, allowing one to each party. Should the Medical Staff be insufficient to afford such medical aid to the several detachments, experienced Medical Subordinates will be placed in charge of the smaller, or less distant parties.

6. Officers commanding stations are authorized to call directly for aid from other stations, divisions, or districts free from cholera.

7. The sick labouring under other diseases than cholera, will move with the force and share the benefit of removal from the cholera atmosphere.

8. It must be insisted on, that all discharges from the stomach and bowels of cholera patients be instantly removed and buried in pits.

9. Strong deodorants are to be thrown into the receiving vessels, as well as into the pits, latrines, and privies.

10. Should cholera follow the Troops they will be moved short distances at right angles if possible, to the prevalent wind and tract of the disease, every second or third day, care being taken that the marches in no way fatigue the men.

11. The breaking out of cholera in a Regiment or at a station is, on no account, to cause the suspension of the soldiers' daily amusements and occupations, care being taken that the latter in no way fatigue them ; and Commanding Officers will use their utmost exertions to develope any recreation or employment of which the effect is to keep the men's minds in their normal state.

12. It often occurs that soldiers on a visitation of cholera, indulge in the use of spirituous liquors, in the belief that they are a preventive against the disease. The medical authorities unanimously condemn this supposed remedy as a certain promoter of the disease : Commanding Officers are therefore enjoined to use their utmost endeavours to prevent so baneful a practice.

13. One of the several cholera antidotes is the early treatment of premonitory symptoms, of which looseness of the bowels is a principal one, Commanding Officers are therefore requested to give the most precise orders on the subject, and to cause all men affected by premonitory symptoms to be placed at once in a premonitory ward.

14. The Troops are not to return to cantonments until all traces of the cholera shall have disappeared from the neighbourhood, either amongst the European or Native population. The barracks and hospitals will be thoroughly fumigated, the walls whitewashed, and the doors and window-frames painted before they are re occupied.

15. The men will be supplied with hot tea and coffee before going out in the morning ; they will invariably wear flannel belts, and all precautions must be taken to prevent their remaining in wet or damp clothes.

16. The Commander in Chief feels persuaded that all Officers share his feeling, that when cholera breaks out in a station, they should be with their Regiments and at their posts.

By order of His Excellency the Commander in Chief,
E. B. JOHNSON, Lieutenant Colonel,
Offg. Adjutant General of the Army.

FURTHER ORDERS REGARDING PRIVILEGE LEAVE OF ARMY MEDICAL OFFICERS.

We have to direct attention to the following notification, with reference to this subject, by which the orders of Government, as given in our last volume, p. 438, are modified. We quote from the Fort St. George Gazette.

NOTIFICATION.

The Notification* from this Office, dated 4th December 1861, is cancelled, and Officers at the Head of the Military Departments, who are authorized to grant privilege leave to the Officers under them are now informed of the decision of the Government of India, that the Regulation under which such leave is granted admits of the leave of absence for sixty days, being taken either at once or in broken periods.

* Fort Saint George Gazette, 6th December 1861.

Pay Code, page 13, para. 33.

THOS. MCGOUN, Lieut. Col.,
Contr. of Mily. Finance.

Office of Contr. of Mily. Finance,
Fort St. George, 24th June 1862.

THE MADRAS

QUARTERLY JOURNAL

OF

MEDICAL SCIENCE.

OCTOBER 1, 1862.

PART I.

ORIGINAL ESSAYS.

ART. VIII.—*On a valuable Diagnostic Sign of the existence of Acquired Syphilitic Taint.* By HENRY CRITCHLEY BRODRICK, M.D., L. R. C. P. ED., Assistant Surgeon, Madras Army, Residency Surgeon, Indore.

IT was whilst reading a *resumè* of M. Ricord's researches in Syphilis, translated by Maunder, and called "Ricord on Chancre," that my attention was particularly drawn to one symptom the author casually alludes to as indicative of the existence of constitutional syphilis, viz., *substernal tenderness.*

Very little stress was laid upon this sign by M. Ricord, so it seemed to me that he attached no very great importance to it.

I believe the importance to the practical physician of the discrimination of this one aid to diagnosis is incalculably great, and I hope in this paper to draw the attention of members of the profession to it, that it may be tested by them, and that it may unravel the thread of many a doubtful case in their practice as it has done in mine.

Substernal tenderness can only be detected by pressure over the bone, and when searching for it formerly, I used

to *knead* the bone with the fore and middle fingers, carefully, from the manubrium to the xyphoid cartilage.

In a case of suspected constitutional syphilis, if the patient be asked if he has got a pain in his breast bone, he will probably answer in the negative. The medical man should then *knead* the sternum carefully and gently along the whole of its course, and the tender spot will generally be found at the commencement of the lower third. With much practice and observation in this class of cases I now generally succeed in touching the tender spot at once, to the great surprise of the patient, previously quite ignorant of the existence of this tenderness.

If substernal tenderness be found, I believe we are quite safe in assuming that the subject of it labours under acquired venereal taint, which may have been masked by divers symptoms and be quite unsuspected both by the patient and the surgeon.

It often furnishes a clue to the cause of very anomalous symptoms, and a most invaluable guide to us in treatment.

For the past eighteen months I have been *kneading* patients' sternums most diligently, and have been not a little laughed at for the same by those not previously aware of the significance of substernal tenderness.

The native doctors attached to the Malwa charitable dispensaries, which I superintend, all now practise this palpation in suspected cases to the very great benefit of their patients.

Although the existence of substernal tenderness is, I believe, unerringly significant of venereal dyscrasia, it must be borne in mind that a patient may be constitutionally syphilitic without manifesting this particular sign. But, when detected, in it the physician has a very valuable guide for treatment.

Substernal tenderness is, no doubt, produced by a periosteal inflammation slight in degree and, may be, in its immediate effects, such as pain and tenderness, inappreciable to the patient.

The Iodide of Potassium must be prescribed, under which the tenderness quickly subsides with other symptoms, which, mysterious before, this sign has taught us to decypher.

I have hunted diseases to their source, at once, in scores of cases since I became aware of the existence and the im-

portance of this diagnostic sign, and the rapid improvement of such cases under the specific treatment, indicated above, has invariably confirmed my diagnosis. I speak confidently on this point; that I am justified in this confidence any one can test easily in his practice.

Constitutional syphilis prevails very largely in *Malwa*, so that I have a large field in which to practice palpation of diseased sterna amongst the sick coming to my dispensaries. I have had a limited experience of this diagnosing amongst Europeans, but I have found substernal tenderness in at least twenty such, and in as many the sign has led to the successful treatment of the disease it indicated.

In a suspected case, then, look for this tenderness; it will usually be found at the commencement of the lower third, occasionally in the upper third, and very seldom in the space intermediate. When it is once made out, the subject of it should at once commence taking the Iodide of Potassium.

This leads me to some considerations of this drug, which, next to quinine, is about the most powerful, efficient and satisfactory remedy the medical man possesses.

I do not believe in the absorption of testes and mammæ, that has been said to have resulted from saturation of the system by Iodine; I have prescribed the drug largely myself, and have seen it given in enormous doses in England, but I have never, as yet, seen its exhibition produce the ill effects it has been popularly saddled with, nor have I ever heard of a genuine and authenticated case of this nature.

If we are to be deterred from prescribing certain drugs, because people have *heard* or "a man who saw a case of this kind *told* me that such and such an ill result occurred," we shall be half disarmed.

It is quite possible that highly organized glandular structure interstitially diseased may have disappeared, whilst the Iodide of Potassium was being taken, but it is not fair to attribute this result to the drug, seeing that, eodem tempore, the organ was in a state favoring absorption, which result might just as readily have followed the exhibition of Morison's pills or the "Rob de l' Affecteur," whatever that may be.

In prescribing the Iodide of Potassium then, we may

safely lose sight, I believe, of the peril of emasculation as one of its ill effects. This drug has the faculty of permeating the economy with extraordinary rapidity.

I remember once seeing a Prussian in whom both ureters opened directly in the groins, and whose urine continually distilled from their orifices. We gave him doses of Iodide of Potassium and in two or three minutes, I forget which, the secretion from the ureters formed blue iodide of starch when caught in a test tube containing starch.

It is best prescribed in five grain doses, and should be given before meals and largely diluted. If a very rapid effect is desired it may be given in scruple or half drachm doses, but, in such large quantities, it is sure, ere long, to induce gastric irritation, nausea, loss of appetite, vomiting, &c. The ordinary signs of Iodism, such as dryness of the fauces, coryza and pain in the frontal sinuses, need be no bar to the continued use of the drug.

It has been stated lately that the effects of Iodide of Potassium are exalted and hastened by combining it with the Compound Spirits of Ammonia. I often give it thus combined.

I often give it with Compound Decoction of Sarza, a medicine that has been much ridiculed as being, to say the least, quite inert. But it is, when given hot, a powerful sudorific, and thus a valuable adjunct in the treatment of such secondary affections as Lepra, Psoriaris, and other skin diseases. Moreover it is certain, that the stomach is much more tolerant of Iodine when thus prescribed than when it is given alone, as it is of Ipecacuanha when given with Extract of Gentian.

Even when prescribed in five grain doses the Iodide is apt to produce gastric irritation after being given steadily for fifteen or twenty days, when the stomach becomes irritable, the appetite blunted, and the alvine evacuations clay colored. It should then be omitted and dilute Nitric Acid with Calumba given, when the gastric irritation will subside; it may then be recommenced.

Formerly it was reckoned a "Spanæmic," but Ricord found, by direct experiment, that the red globules of the blood were augmented in quantity during its exhibition.

I have never made such experiments myself, but the fact of patients growing strong under its use, and picking up in condition, as they do, shows plainly how powerfully it acts

in improving the tainted blood and increasing its hæmatin and globulin. It may do this indirectly by stimulating the absorbents and giving new tone to nervous structure; it is enough for me that, when judiciously given, it rapidly brings the patient into condition.

Iodide of Potassium is now procurable in a state of absolute purity, being largely used in paper photography: I seldom find samples of it adulterated, as it used to be, with the Carbonate of Potassa.

I now very briefly allude to some other signs of acquired constitutional syphilis, which too are alluded to by Ricord as "inguinal and cervical adenito," in other words chronic induration and enlargement of inguinal and cervical glands.

I believe that whenever you find substernal tenderness—ergo constitutional syphilis—you will find some of the upper tier of inguinal glands enlarged, hard, moveable under the finger and painless, and never single. Ricord calls this affection "multiple adenito."

Enlargement of the posterior cervical glands is not so easily detected, but if I take sufficient pains in the search I never fail to find "posterior cervical adenito." Such an adenito may very commonly be found between the posterior border of the sterno-mastoid and the anterior border of the trapezius muscles.

Here then we have three very valuable diagnostic signs of constitutional syphilis being present, of which I attach most importance to the substernal tenderness.

The medical man who refrains, from motives of delicacy, from putting leading questions to his patient regarding indiscretions or misfortunes, may, by means of palpation of the sternum, often get all the information he requires. I have often done so, and have in several cases detected thereby the existence of acquired venereal taint in native women, domestic servants, and others, when by inquiring from their husbands I have subsequently had my diagnosis confirmed.

In the above remarks I have given no uncertain sound, but my confidence is the offspring of a considerable experience and of careful observation.

In conclusion I would beg to suggest that all Medical officers who are employed in the examination of recruits,

European and Native, might advantageously bear these facts in mind: the knowledge of them might prevent the enlistment of many diseased recruits, men destined during their service to haunt the hospitals and to be eventually invalided, withered by this dreadful, widespread scourge.

Art. IX.—*Notes upon Certain Surgical Applications, and upon Some Minor Points in Surgery.* By W. N. Chipperfield, Staff Assistant Surgeon, Professor of Anatomy and Physiology, Madras Medical College, &c.

[*Continued from page* 101.]

THE RADICAL CURE OF REDUCIBLE HERNIA.

These seem words of great promise to the unfortunates who are the subjects of rupture. The discomfort, the want of perfect efficiency and the liability to get out of repair of even the very best devised of the trusses in ordinary use are acknowledged; and we cannot feel surprise that the known danger attendant upon a neglected hernia prompts the sufferer to very willingly submit to any operative procedure which is said to be effectual, free from every element of detriment to life, and unaccompanied by any great amount of pain.

I purpose here shortly to review the claims to our confidence which have lately been put forth on behalf of certain means for the radical cure of hernia. I am aware that it may be said that this topic scarcely has its legitimate place in *Notes upon Minor Points in Surgery;* but it so naturally presented itself to my mind in connection with the subject of metallic sutures, that I shall risk the accusation which may be made against me, of infringing the modesty of the title which I have given to this paper, by here entering upon this matter.

Proposals for the radical cure of hernia are by no means of only recent date. Those who care to make themselves acquainted with the procedures our forefathers established for the cure of "bursten belly" will find in the Edinburgh Medical Journal for December 1861, a paper on this subject, entitled *Notes on the History of Attempts to obtain Radical Cures of Inguinal Ruptures.* Or if they are content with

a concise summary of these procedures, such may be found in Chelius.* The latter author says :—

"The *radical cure* of reducible ruptures (especially inguinal ruptures) was attempted in ancient times in very different and in part cruel and barbarous ways, which had only their corresponding excuse in the ignorance of, or in the bad construction of trusses. Even later modes of treatment have found little favour, on account of the danger therewith connected, and because of the more perfect construction of trusses; and only of late have these objects again attracted more attention, and less dangerous methods of treatment have been proposed."

I will not be ungracious enough to say that there is nothing of novelty or ingenuity—for, at the very least, there is a great deal of the latter—in the various procedures which have been recommended, within the last few years, in order to effect a radical cure of hernia; but it may be safely affirmed that they are all, more or less, modifications of different processes which have previously been put in force to carry out a principle acknowledged to be *a desideratum* of a radical cure. Chelius† enunciates this principle in the following words :—

"All the modes of treatment in reference to the radical cure have for their object the organic closing of the neck of the hernial sac, or of the abdominal ring, or to effect both at once."

And he goes on to say in illustration of the means which have been adopted to effect this object :—

"Which has been attempted by a sufficient degree of *adhesive* or *suppurative inflammation*, and thereby causing *adhesion;* or by a *plug of skin healed into the abdominal ring.* These may be collected together under the following heads; *first*, Increased pressure whilst lying constantly on the back, with, or without, the simultaneous application of irritating and contracting remedies; *second*, Caustics and the actual cautery; *third*, Ligature of the sac, with, or without, cutting it off; *fourth*, Introduction of foreign bodies into the hernial sac; *fifth*, Healing in of a detached portion of skin, or of a portion of infolded skin, into the abdominal ring."

The last named process, the inhealing of a plug of skin, has undoubtedly been the basis of most of the modifications in the mode of operating which have lately come into vogue. But this is not the case as regards three, at least, of the so-called radical cures.

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* A System of Surgery, translated by South, 1847. Vol. ii. p. 23.

† Op. cit.

The first of these is named Mösner's method, and it may be considered as coming under Chelius's fourth head.

It consists of invaginating the scrotum into the inguinal canal, and then passing a seton, composed of one or two threads, through the apex of the invaginated structures onwards through the integuments over the canal. The temporary plug is then permitted to descend, and when it has fallen into its place the two orifices through which the seton passed are widely separated, the one being in the skin of the inguinal region, the other in that of the scrotum, the seton itself being lodged in the inguinal canal. This seton is permitted to remain for two or three weeks, pressure being made over it by a compress and bandage. Inflammation, followed by suppuration, occurs throughout the track of the seton, and, ultimately, a deposit of adhesive material takes place. Moderate pressure is kept up for some weeks in order to secure adhesion and consolidation of the parts.

Professor Rothmund* of Munich gives the following as the result of 34 operations according to this method. Cured 29, ameliorated 2, no result 1, death 1; leaving 1 unaccounted for.

The second instance may be found in the Edinburgh Medical Journal, December 1860, under the heading *A New Radical Cure for Hernia*, by Dr. J. Morton, of Glasgow. This paper is noticed also at page 177 of Vol. xxxiii. of Ranking's Half-yearly Abstract of the Medical Sciences.

This operation, which comes under Chelius's third head, consists in passing a metallic ligature subcutaneously around the sac at the lower part of the inguinal canal, carefully excluding the cord, and fixing the ends of the ligature to a leaden plate by means of a nipple. The ligature is removed a few days after its application. The notice of this cure concludes with the following paragraph:—

"The advantages of this mode of operating are, chiefly, its simplicity, its causing little or no suffering, its effectually closing the hernial sac and causing its opposite sides to adhere, and that comparative freedom from dangerous or disagreeable consequences which is well known to accompany subcutaneous operations, and even other lesions of various parts, when the skin remains sound or nearly so. In the aged it must be difficult to procure adhesion by

* Quoted by Mr. Lane from Nélaton's *Elemens de Pathologie Chirurgicale*, in Cooper's Surgical Dictionary. New Edition, 1861. Art. Hernia.

pressure ; whereas ligature would be certain to do so, and the risk of peritonitis almost infinitesimal."

I have no hesitation in believing that Dr. Morton supposed he was perfectly original in putting this procedure into practice. But nevertheless it appears to me to be but a very slight modification of the *punctum aureum*, which, as practised by Berard and Franco, consisted of exposing the hernial sac by an incision, encompassing it with a needle, and introducing a golden thread which could be drawn so as to close the hernial sac without compressing the spermatic cord. Or it may be considered but an equally slight modification of Paré's operation—another form of what German Surgeons call *Zusammenschnürung des Bruchsackes*,—viz., separating the hernial sac from the surrounding parts, and then tying it with a leaden thread.

The modification seems to consist simply in the partially subcutaneous character of the ligature. I say *partially subcutaneous* because I cannot consider a ligature to be completely subcutaneous, the ends of which are drawn out through the integument and there fastened to a shield. Dr. Morton relates one case operated upon on the 4th of August 1860 ; on the 13th the ligature was removed ; on the 29th it was found that when the compress and bandage, which the patient wore, were removed, and he coughed or walked about, the intestine filled the inguinal canal. On this day he was discharged and desired to wear a truss and return in a month or two in order that a ligature might be applied at a higher point. On the 18th of September he presented himself stating that he had not enjoyed so much comfort for years, and that, although he had exerted himself a great deal, the intestine had only once come down as far as the place where the ligature was applied. I can find no notice of any subsequent operation having been performed on this man.

Dr. Morton considers the risk of peritonitis almost infinitesimal. But Chelius*, who is certainly entitled to a hearing on this subject, says :—

" All the modes of operation mentioned are more or less dangerous, especially cauterizing, *tying, and stitching up the hernial sac*, and the introduction of tents, as the inflammation thereby excited quickly spreads over the whole of the peritoneum and the intestines. Therefore, also, many of the earlier adherents to this or that practice, have,

* Op. cit. pp. 27, 28.

after unfortunate results, given them up entirely; and although some, for instance, Kern* have always observed fortunate results, and only one case terminated fatally, yet these assertions are too greatly opposed to the experience of others to enable us to yield them entire belief."

The other operation to which I have referred as not coming under the denomination of inhealing of a plug of skin, is that of Professor Chisholm of South Carolina. In this instance we have a true subcutaneous ligature, and not a mere modification of the *punctum aureum* (as might at first sight be supposed), for encircling the neck of the sac by the wire forms no part of the operation. The description of the method of proceeding may be found, extracted from the American Medical Times, No. 5, 1860, at page 178 of Ranking's Abstract, Vol. xxxiii, following that of Dr. Morton's operation.†

Dr. Chisholm had performed Mr. Wood's operation and was not satisfied with the results: he then modified the process but still he could not rest satisfied, and he was therefore induced to "add a still greater improvement, simplifying the entire procedure, and obviating nearly all the objections which have been, or may be, urged to Wood's."

As I am desirous of not overburthening these "notes" with lengthy extracts, I shall merely give an abstract of the description of the operation, which is extremely simple and very easily performed.

The operation consists in passing a ligature through the columns of the ring and drawing the latter firmly together. The scrotum is invaginated upon the finger and a long, strong, curved needle, firmly fixed in a handle and armed with a silver wire, is made to transfix the scrotum at the apex of the invaginated portion and to pass through the internal pillar of the ring and appear through the skin of the abdomen, when one end of the wire is freed. The point of the needle is then withdrawn as far as the puncture in the scrotum and, its direction being altered, it is made to pass through the external pillar, and, by traction on the integument, to appear at the spot where the other end of the wire passed out. The wire is then extricated from the

* He applied caustics so as to burn through the skin and hernial sac down to the bone.

† See also Braithwaite's Retrospect, Vol. xliv, p. 128.

needle and the latter withdrawn. The finger is now removed from the ring and the two ends of the wire are drawn upon until the columns are brought into such close apposition as to allow nothing to pass between them—the remaining available space being completely filled up by the cord in its passage into the canal. The wire is then twisted tightly, drawn firmly outwards and clipped off close to the skin; and, when the traction which has been made on the integuments to secure the exit of both ends of the ligature at the one orifice, is removed, the skin glides back to its normal position and the loop of silver wire becomes completely concealed. This loop remains as a permanent subcutaneous ligature.

The invaginated portion of the scrotum immediately falls back to its original position, and the only trace of an operation having been performed is in the two small punctures, one in the scrotum and the other in the skin of the abdomen. These heal up in a few hours, hermetically incarcerating the wire.

We are told that:—

"A moderate inflammation follows the operation, without much pain or swelling, and without any fear of suppuration. The wire is soon imbedded in a lymphy deposit, which will not only inclose it, thus isolating it from the tissues, but, at the same time, agglutinates the columns together as an additional security to the success of the operation. * * * An essential element in the success of the operation is that the loop encircles the columns of the ring near their points of attachment to the pelvis. Otherwise the columns cannot be approached, the ring remains open, and the results can only be negative. If this step of the operation be carefully followed, a radical cure may be nearly guaranteed.

"The advantages of the operation are, the short time the patient is detained in bed (four or five days), the slight amount of inflammation produced, the dispensing with the use of a truss, and the security against relapse consequent on muscular effort—the reliance being placed, not on newly formed adhesions, but on the silver wire."

I have seen this operation performed twice; each time upon a European. In neither case could it be said that there was "no fear of suppuration," for in both this process did take place. In one it was slight and apparently only in connection with the twist of the wire. In this case the operation was so far successful as to prevent the passage of the intestine through the external ring, but upon exertion

or coughing a slight hernial protrusion took place into the upper part of the inguinal canal.

In the other case the suppuration was profuse and long continued, and the puncture through which the ends of the wire had passed did not heal. Whilst the patient was walking about, some weeks after the operation was performed, he noticed that the bowel had descended into the scrotum, and upon an examination being made it was found that suppuration had occurred throughout the track of the wire, and that the latter had cut through the pillars of the ring and was lying loose in the subcutaneous areolar tissue. The wire was removed and the parts healed, but the hernia was as if no operative proceeding had been practised.

This is the particular instance to which I alluded when speaking of the occasional occurrence of suppuration in the track of a metallic ligature.

I have not seen either Mösner's or Morton's operation performed, and I suspect that it is scarcely likely that I shall ever have an opportunity of witnessing the latter.

The inhealing of an uncut plug of skin originated, I believe, with Gerdy. His operation was extremely simple. He stitched the invaginated scrotum into the canal by passing threads from the apex of the insheathing through the integuments of the groin and there tying them. Caustic ammonia was then applied to the plug to excite imflammation, and a compress to secure adhesion after the suppuration had ceased.

I really believe I am using perfectly legitimate language when I say that, with the exception of the three instances above noticed, all the recently proposed operations for the radical cure of hernia are modifications of this method of Gerdy.

It is possible that Mr. Wood may consider that his mode of proceeding is not based upon Gerdy's method, for he does not heal-in a plug of skin but one of areolar tissue, and he further insists upon one end of his ligature passing through the conjoined tendon of the internal oblique and transversalis muscles so as to take up the posterior wall of the canal.

But, nevertheless, in my humble opinion, Mr. Wood's operation is in reality a modification of Gerdy's, and a remarkably well devised modification it is.

When I say *all the recently proposed operations,* of course

I must be understood to refer only to those with which I am acquainted, for there may be some of which I have as yet no knowledge. In order to avoid any error I may as well enumerate those to which I allude. They are those of Signoroni, Wützer, Henry Lee, Wood, Syme, and Agnew of Philadelphia.

With the exception of the latter, which is very similar to Signoroni's, I have either myself practised, or seen performed by other Surgeons, all of these operations. Some of these patients have been apparently cured; in others, who remained a sufficiently long period under observation, hernial protrusion again occurred—in some so as to produce what our fathers termed a bubonocele, in others a complete scrotal hernia recurred; and some of the cases were failures from the very first.

The methods of performing these several operations have been so frequently brought to the notice of the profession, in the different Medical Journals, that it is quite unnecessary to give any description of them here.

The efficiency of Wützer's operation has been abundantly testified to. Mr. Holmes Coote, Mr. Spencer Wells, the late Mr. Jones of Jersey, and other British Surgeons have published numerous successful cases; whilst Professor Rothmund of Munich, who much improved Wützer's instrument, is said to have operated, up to the autumn of 1857, upwards of one thousand times without one fatal result.* The only statistics of Professor Rothmund's which I have met with are those in Nélaton's *Elemens de Pathologie Chirurgicale*, where out of 127 operations on males, he reports 117 cured, 4 ameliorated, and 6 with no result; and out of 7 operations on females, 5 cured and 2 with no result. In Vol. vi. of the Indian Annals of Medical Science, Mr. Scriven has published two interesting papers on the subject, in which he speaks very highly of the operation. And Dr. Fayrer, in Nos. 13 and 15 of the same journal, reports 22 cases operated on by him, of which 12 were cured, 7 benefitted, and 3 failed.

It is certain that Wützer's operation is a great improvement upon Gerdy's, for the presence of the cylinder in the canal keeps up the pressure of the plug upon the posterior wall more effectually than any compress and bandage

* Mr. Spencer Wells in Dublin Quarterly Journal, May 1858, p. 363.

could do, and thus the occurrence of adhesion is greatly favoured.

Wützer's instrument is a very ingenious contrivance, and, as improved by Rothmund, is capable of application to almost every case suitable for operation. But Mr. Syme has very much simplified the operation, or, to use his own words, has "facilitated the operative precedure, and attained M. Wützer's object in the simplest way, and with means which every Surgeon has in his possession." Mr. Syme's procedure is so extremely simple and so very easy of performance that I should certainly prefer it to all the others were I perfectly convinced that he is absolutely correct in his opinion as to its equal efficacy. Mr. Syme is reported to have remarked, that "how far the cure in such cases would be permanent, he was not prepared to say; M. Wützer must be responsible for the permanency of the result."

In the Medico-Chirurgical Transactions, Vol. 42, page 76, Mr. Wood gives an elaborate description of his perfected operation, and he does not admit that any element of danger enters into it; but Mr. Scriven* points out that the epigastric artery may be cut through with the needle, if the course of the vessel should be rather more transverse than usual. A case is related† in which the patient was so unruly whilst Mr. Davies was performing Wood's operation that he threatened to leave him, upon which he became more quiet and the operation was completed. In the course of the night of the same day Mr. Harding, whose patient it was, was sent for and found him labouring under an acute attack of peritonitis. Every thing was immediately cut away, but he died in a few hours. No *post mortem* examination was allowed. According to my notion, this instance, like the case reported by Dr. vanSomeren in the last number of this Journal, in which death from tetanus followed Syme's operation, must be looked upon as a mere accident and quite an exceptional case.

Mr. Scriven reports two cases in which he successfully performed a modification of Wood's operation, omitting to pierce the conjoined tendon; each case combined many of the conditions that render Wützer's operation unlikely to

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* Indian Annals, Vol. vi, page 549.

† Dublin Quarterly Journal, February 1862, page 66.

succeed. These conditions are, an old hernia with closely approximated rings ; a very much enlarged external ring ; an adherent, irreducible, thickened sac ; hypertrophy of the scrotum.

Mr. Redfern Davies of Birmingham, very ingeniously modified Wützer's instrument by having the plug formed of two valves hinged together and capable of being separated from each other, when placed in the canal, by turning the handle of a dilating screw. By this means a more close apposition of the plug to the posterior wall of the canal can be effected. But Mr. Davies tells us, in a short but interesting paper, published in the Dublin Quarterly Journal, February 1862, that :—

"Since October 1859, I have adopted, almost exclusively, for the radical cure of hernia, the method devised by Mr. Wood, and after finding, from the results of upwards of fifty operations, that it is the most successful and least painful plan known, I most unqualifiedly prefer it."

Coming from such a practical man as Mr. Redfern Davies, this must certainly be looked upon as high testimony to the efficacy of Mr. Wood's method.

There can be but little doubt that Mr. Wood's complete operation is somewhat more difficult of performance than any of the others. Especially is this the case in India where one is so frequently called upon to extemporise, or depend upon one's own ingenuity for the manufacture of, such implements as may be required upon an emergency. I have frequently felt this disadvantage when so unfortunate as only to command needles either too brittle or too flexible to effect the purpose. However I must own that I have a great predilection in favour of Mr. Wood's operation. Mr. Lane is of a different opinion, for he says :—

"Where operative procedure is undertaken for the radical cure of hernia, I am much inclined to recommend the more simple methods of Gerdy and Mösner to the profession, for further trials, in preference to the more complicated proceedings of Wützer, Rothmund, and of Mr. Wood. I would venture also to suggest a combination of Gerdy's and Mr. Wood's operation, in which the sutures might be applied to the boundaries of the inguinal canal as nearly as possible according to Mr. Wood's directions, but passed through the invaginated skin, instead of subcutaneously, as above described. Lastly, it appears to me that, to Mösner's longitudinal seton transverse ones might be advantageously added, or that Gerdy's

operation with an upper, lower, and central suture instead of an upper one only, might be more effectual."*

With reference to the last suggestion of Mr. Lane, I may remark that, to me, such a proceeding bears the promise of far less efficacy than the somewhat similar processes which have been practised by Signoroni, and Prof. Agnew.

But the question which presents itself to my mind, with regard to all these operations, is, *Can they be truly looked upon as radical cures?* That they all, in a more or less perfect manner, effect the object proposed there can be no reasonable doubt. That object being to cancel the patency of the external abdominal ring. Some of them aim at something more than this; Mr. Wood's operation in particular, for it is evidently specially designed to secure adhesion between the anterior and posterior walls of the inguinal canal. I have seen it performed with this object kept steadily in view, and I have known it to fail primarily in this respect upon two occasions, the bowel having descended a few days after the sutures were removed.

I have previously mentioned that some of the cases which I have seen have been apparently cured. I used the word *apparently* designedly, because I do not think that, as yet, I have seen any cases, or read of operations by others, in which the patients were kept a sufficiently long period under notice, or in which opportunity presented itself for examination of patients at a sufficiently remote period after operation, to enable us to judge of the permanency of the so-called cure. Mr. Scriven is of opinion that the final result of such an operation would require the experience of a year or more after leaving off the truss. I do not consider that four years would be any too long a period to fix upon.

Upon the changes which occur after operation Mr. Scriven remarks:—

"On the withdrawal of the instrument and gradual descent of the integuments the new formation is stretched, or, perhaps more correctly, its growth is regulated accordingly, and the result is a ligamentous chord descending from the internal ring to the puncture of the scrotum, filling the canal and adherent all round. The invaginated sac, obliterated within and without, perhaps forms a part of this solid chord. The growth is probably similar to that which joins the two ends of a divided tendon, which in order to commence

* Cooper's Surgical Dictionary, 1861. Vol. i, page 976.

the process must be kept in contact for a few days, and the length of the new formation afterwards regulated by extension. The adhesions of the chord in the inguinal canal may be broken through while recent, by a hernia that has a great tendency to descend, but if the hernia can be kept up until the adhesions are strong enough to resist the descent, recurrence is of course impossible."

I perfectly agree with Mr. Scriven, but I would again raise the question, for how long a time is it necessary to keep up the hernia, by a pad or truss, before the adhesions can be said to be strong enough to resist the descent? I believe the three months which are generally recommended to be totally inadequate for the purpose, and that if a truss is to be worn until the adhesions have become strong enough to effectually keep up a hernia which has a great tendency to descend, it had better be worn till this tendency is overcome by death. I have observed, as Mr. Scriven has done, the hard mass in the groin gradually diminish in size, and I have felt the ligamentous cord, extending from the canal to the scrotum, gradually becoming filamentous in its character, and I have seen a hernia, more than once, descend behind such cord into the scrotum.

A sailor, the subject of scrotal hernia, once came under my notice, who stated that he had twice been operated on in America and once in London; all three operations had failed, but he was perfectly willing to submit to a fourth. Upon being asked the name of the London operator his memory at first appeared defective on the point, but when the name of Wood was suggested he exclaimed, "yes, yes, that were the Gen'lm'n's name." However it proved subsequently that he was, upon all occasions, so peculiarly reticent of the truth that only a very limited amount of credence could possibly be afforded to any statement he chose to make.

It is quite possible that the adventitious material effused, after any of these operations, and the adhesions which are formed, may be quite sufficient to entirely destroy the somewhat tubular character of the inguinal canal—*i. e.*, to fill up all space not *de facto* occupied by the cord; but, at all events, there must be a passage left for the cord itself. Now we know that some herniæ in their descent dissect the cord into its component parts, and I cannot but think that, where the tendency to descend is great, there will inevitably be a passage formed for the bowel, whatever be the apparent

strength of the adventitious structure induced to form in the canal.

It will be seen that in objecting to the application of the term *radical cure* to any of these operations, I am by no means offering any objection to the operations themselves. I am sure that most of them effectually perform the immediate occlusion of the ring and part of the canal, but I question whether this can be looked upon as a radical cure of the generality of herniæ; and I am, at present, unconvinced that, where a distending force is constantly at work, the occlusion is more than temporary. That very small and recent herniæ, in young and healthy persons, may be cured by such means there can be no doubt; and the same may be said of the constant application, for a certain period of time, of a well-fitting and suitable truss. But with reference to larger and less recent ruptures, especially those of persons passed the prime of life, I would say in the words of Chelius—

"All the modes of treatment * * * in reference to their *permanent* consequences are uncertain, and the statements of the cures are confined principally to immediately after the operation. Although the external abdominal ring and a part of the neck of hernial sac be closed, there remains (in external or oblique inguinal rupture) the opening of the internal abdominal ring into which the intestines again enter, and by gradual subsequent absorption of the effused plastic mass, and the thinning of the scar resulting therefrom, the rupture enlarges outwardly. * * * The possibility of an unsuccessful, and the probability of a not permanent result must not be withheld from the patient's knowledge. The patient's wish to be cured *radically*, at all hazards, and to get rid of the use of the truss must not, according to the hitherto noticed results, determine the Surgeon to operate."

Mr. Redfern Davies mentions that although he has operated according to Mr. Wood's plan upwards of fifty times he has failed to *cure* but five cases. It appears pretty evident that the word *cure* is used in this sentence with respect to the immediate, rather than the ultimate results. This gentleman says:—

"With regard to the permanency of the cure effected:—The first case I did, and which is reported in the Medical Times, June 12th 1858, remains still well *on one side* and has done so ever since he was operated upon, then being received into the police force." Several men have entered the army; and I always ask people upon whom I have operated, how they are when I see them again (which in a

workhouse practice—tramps, &c.,—was very frequent), and I am invariably told, that their cases remain perfect. Some few cases however I know of as having relapsed."

Upon looking up the case above referred to by Mr. Davies, I find that the patient was affected with double inguinal hernia and that both sides were operated on, according to Wützer's method, and the man was considered cured. Here, then, we find a failure in the permanency of *one cure*, and as only three years and a half could have elapsed since the operation, at the time Mr. Davies was writing, I submit that the permanency of *the other cure* is by no means a settled point. I apprehend that a Surgeon would speak of an operation as palliative only, and not as a cure, if he foresaw any chance of a return of the original disease.

It is always a good plan when a Surgeon is required to operate, for him to look at the matter as much as possible from a personal point of view, and to carry out exactly such a proceeding as he would desire to have put in practice upon himself were he the sufferer. In this light I have devoted a considerable amount of attention to the radical cure of hernia, and, were I the subject of such an affection, I would most unhesitatingly submit to one of the more recently introduced operations; either Wützer's with Davies's improved instrument, Syme's, Wood's, or Chisholm's. *But* so soon as all inflammatory symptoms had subsided, and what is commonly called *the cure* had resulted, I would exercise such ingenuity as I could bring to bear upon the manufacture of a comfortable, beautifully fitting truss, the ceinture of which should be composed partly of elastic webbing and partly of some non-resistant material which should enclose a short, fine, elastic steel band, and the pad of which should be weak-springed but should nevertheless accurately support the internal ring, without unduly pressing upon the material recently introduced into the inguinal canal. This truss should form an item of my daily habiliments, only to be taken off when I assumed the recumbent posture.

Mr. R. Davies supports the abdominal walls "for a time" (he does not say for how long) with a compress and spica bandage. But he says the propriety of the application

"is now a very much debated point. We know that continued pressure induces absorption, so that it is reasonable to infer that the constant pressure of a spica bandage and compress, will so act upon the recently introduced tissues in the inguinal canal and ring,

and that, eventually, there will be produced as bad a state of things as there was before any operation was attempted.

"However, practically, such is not the case."

It is true that constant, continued pressure induces absorption, but it is equally true that interrupted pressure produces hypertrophy, so that I should not have the slightest fear of my truss making matters as bad as they were before the operation was performed.

It may be asked, why have any operation performed at all? Why not trust simply to a good truss? I answer—*first*, That my faith in the power of even the very best devised truss to effectually keep up any hernia, which is more than a simple bubonocele and which has a great tendency to descend, is but very slight; *second*, That the worst cases of strangulated hernia, that I have met with, have been those in which the descent had taken place whilst the patient was wearing what he considered an efficient truss; and *third*, That the mortality after operations for the relief of strangulated hernia is far too high to cause me willingly to leave myself in a position likely to lead to my becoming the subject of such operation.

These "Notes" on the radical cure of reducible hernia, have extended to a much greater length than I originally intended they should, or even imagined they would extend. I have tried to shorten them, but I find that any further condensation than that which I have effected, would not permit of that honest and straightforward expression of my views on the subject which it is my desire to place before those who may honor these notes with a perusal.

WOUNDS OF THE ABDOMEN IN NATIVES OF INDIA.

From May 1856 to September 1858, I was stationed at Vizianagrum, with the exception of an interval of three months, during which my Regiment was on a "dour" in the Kimedy District.

If the stations in the neighbourhood of the Head Quarters of the Northern Division were looked upon as the centres of circles peculiar to themselves, Vizianagrum would be near the centre of a circle, the radius of which would be about twenty miles, Vizagapatam circle meeting it on the south-east, and Chicacole circle on the north-east. Eastward lies the sea, and westward a tract of jungly, swampy country leading to a range of hills, of which Galikondah—a proposed

sanitarium for the division—forms a prominent object. From January 1857 to April 1858, I was the sole European Medical officer in the Circle.

I found that the mild Hindoos residing in that part of the Peninsula of India (following the example of their enlightened Rajah) were always very willing, or indeed, I may say, anxious, to submit their ailments to the treatment of the European doctor; and, believing that this feeling was one which deserved to be fostered and treated with respect, I encouraged it, to the best of my power, by affording shelter to such as required constant supervision in a spare ward in the Regimental Hospital, and in the verandah of the little Station Hospital, and by providing medicines for all, and food for the very necessitous patients. By these means I obtained opportunity of witnessing many very interesting cases.

The population of the district I am alluding to is composed chiefly of ryots, and in their agricultural pursuits they use principally buffaloes as beasts both of draught and burden. This is especially the case between Vizianagrum and the sea, and northwards as far as Conada. The ryots here do not follow the practice, generally observed by those in other parts of the country, of filing or sawing off the sharp extremities of the horns of their cattle, but permit them to remain *au naturel*, and very many punctured wounds occur in consequence. Several cases of the kind were brought to me for treatment, and although the injuries were in every case severe, yet I must confess that I was much astonished to find that, with one exception, they all did well; for I had been impressed, during practice in England, with the very serious and too often fatal character of such accidents.

Unfortunately my note books were lost when I was leaving Moulmein in 1859, and I am therefore prevented from giving any detailed accounts of these cases, but their general features were so impressed upon my mind that I have no hesitation in referring to them in these "Notes."

The number of these accidents which I had opportunity of treating was not less than twenty. They generally occurred in the evening whilst the buffaloes were being driven to their pasturage or shelter, and, with the usual dilatoriness of the native, the sufferers were not brought into Vizianagrum until early the next morning. The patients were, for the most part, conveyed in a rough kind of munchiel, composed

of a cloth suspended to a bamboo carried upon men's shoulders.

Upon admission it was found, in every case which presented itself to my notice, that a punctured, more or less lacerated wound existed in one of the flanks and that protrusion of the intestines had taken place. The latter were almost universally wrapped up carefully and with a moderate degree of tightness in a common cloth, the removal of which often caused a good deal of pain, for, by the coagulation of the blood and the effusion of lymph upon the peritoneal coat, the cloth had become glued to the intestines, and the pattern of the warp and woof of the cloth was impressed upon their surface, and very frequently foreign matters, such as bits of straw, were adherent thereto.

The patients were all males; the youngest was about twelve years of age and the oldest about forty. Upon arrival they were all more or less exhausted, and therefore some hot soup, if procurable, or a glass of wine or other stimulant was given to them, and then the act of peeling off the confining cloth was performed. This was facilitated by a plentiful affusion of tepid water; all foreign matters were removed, and the intestines then carefully washed. The latter were then examined and, if they were uninjured, their return was immediately commenced. The wound was felt for—it was generally concealed by the protruded mass,—and in several of the cases it was found so small as to present a kind of stricture offering an impediment to the ready return of the intestines. When this happened, I enlarged the wound by the use of a probe pointed bistoury, and if the intestines were not wounded they were at once returned. Any one who has had experience in such cases is aware of what a tedious business the return of intestine, protruded to any length and distended with air, very frequently proves. As fast as one knuckle is returned another is pushed out, and thus a considerable time may elapse before the process is completed. The return of the bowel having been effected, the wound was then accurately closed by points of interrupted suture—common thread sutures, for there were no metallic ones in use in those days, or, if in use, not at my command. A full dose of opium was given and the patient put to bed.

All the cases were not of the above mentioned simple nature. In some instances the intestine was lacerated,

torn longitudinally. When this had occurred, I used the glover's stitch to close the wound, employing it *secundem artem* so that the knot on the thread lay within the cavity of the bowel and the serous surfaces were brought into actual contact, in order that lymph might be effused over the suture, and the latter, when separated, might pass into the intestine and not into the peritoneal cavity. In only two instances, so far as I recollect, did any symptoms of peritonitis appear. The treatment of this complication was extremely simple; opium was exhibited internally—one grain every two or three hours—and turpentine stupes externally, of course avoiding the immediate neighbourhood of the wound.

The length of bowel protruded varied; in the young lad not more than nine or ten inches, but in some of the other cases there were quite as many feet. In one, I remember remarking that a great part of the jejunum and the whole of the ileum, even down to the ileo-cæcal valve, lay upon the surface of the abdomen.

I was much surprised at the rapid progress towards recovery which all these cases made. Very seldom was it necessary to administer any medicine; rest, quietude, and careful diet were all that appeared to be required. Of course it was an object to keep the bowels quiet for two or three days, and when it was deemed requisite to solicit their action, this was effected by a dose of castor oil followed by a simple enema.

I have said that one case only terminated fatally. This was a middle aged man, in very indifferent health, who had received very extensive injuries. He had been repeatedly gored by a buffaloe as he lay on the ground after the first thrust had ruptured the abdominal parietes, just above the left groin, to the extent of fully five inches. A portion of omentum and several feet of intestine were found lying upon the surface of the abdomen, after the removal of the cloth in which they had been swathed. The mesentery was torn through in several places and the intestine completely ruptured across at corresponding points, and there was one longitudinal rent nearly a foot in length. Finding the man had lost a considerable quantity of blood and was very exhausted, and seeing the utter hopelessness of the case, I merely directed that some stimulants should be given him, and told his friends that he was quite beyond the reach of any aid.

However they were so very clamorous for something to be done for him, and supplicated so earnestly that I would put back the bowels, that I yielded to their entreaties and put in practice what I believed would afford him the best chance.

I returned the omentum, and tying the mesentery with a stout ligature, I removed all the torn portions of the intestine, a length of about two and a half feet. I then brought the extremity of the upper and lower portions together, and stitched one half of the circumference of the one to the corresponding half of the circumference of the other. Giving the end of the ligature to an assistant to hold, I returned first the upper and then the lower portion of intestine into the abdominal cavity, and taking the end of the ligature I stitched the remaining half of the circumference of the upper portion of the bowel to one end of the upper lip of the wound, and, similarly, the remaining half of the circumference of the lower portion to the lower lip, and then completely closed the rest of the wound. The open mouths of both upper and lower portions of the bowel were thus left firmly stitched to the wound ; the sides of the lower portion fell together immediately, as do those of a divided vein, but the upper remained open and a small quantity of air and slightly feculent liquid matter escaped therefrom.

I had not the slightest expectation that the poor fellow would rally; I merely yielded to the distressingly earnest importunities of his relatives, and put matters in what I considered would be the most favourable condition in case the patient survived. The object of the procedure was to permit an artificial anus to be established at the wound in the first place. But this was not all I had in view : I intended to keep up the patency of the lower portion of the intestine by occasional passing a long bougie, and ultimately to seek to close over the artificial anus, by a kind of Taliacotian operation, in such a manner that a passage should be preserved from the upper into the lower portion of the bowel. This last was, necessarily, a matter which scarcely came into consideration at the time ; had the patient survived I should have been prepared to attempt the cure of the artificial anus according to the method of either Dessault or Dupuytren, both of whom have recorded successful cases. However the opportunity was not afforded me, for the poor man only lived a few hours after I had operated on him as above detailed ; and his friends were quite satisfied that he

did not die without something being done for him, or in consequence of what was done.

The situation of the wounds in these cases was generally about the middle of the anterior aspect of the inguinal region. In only the fatal case just related do I remember that any very great hæmorrhage occurred; and, although the wounds were for the most part through tendinous structure, in no instance did any symptoms of tetanus appear.

A little previous to the time of which I have been writing, viz., in September 1856, I had the opportunity of witnessing a case of penetrating wound in the epigastric region, which ultimately terminated in recovery, though the patient remained for a long time under treatment. The patient in this case was a Hindoo sepoy, and during the Mohurrum festival he stood at a corner of the tent in which the ceremonies were being performed, and was endeavouring to make an aperture through which he could witness what was going on. An individual in the tent, observing the attempt to loosen the fastenings of the kanaghts seized a sharp javelin and thrust it through at the part where he saw the fingers at work. The head of the javelin entered into the epigastric region just below the ensiform cartilage; it was immediately withdrawn, having caused a wound about three and a half inches in length. The wounded man fell to the ground with a loud cry, was discovered, and conveyed to hospital.

I may here mention that a court of inquiry was instituted, but, if I remember rightly, the user of the javelin was not discovered; the weapon itself lay in the corner of the tent. I presume the assailant's co-religionists sat in judgment on the Hindoo Peeping Tom and brought in a verdict of "sarved him right," and determined not to give up their friend's name.

Upon examining the wound I saw the surface of the stomach; the organ was uninjured, and exhibited, especially towards its pyloric end, a true peristaltic action, contracting in successive waves somewhat oblique in their direction. The action of the splenic end of the organ was less wave-like and more irregular. I learnt that the man had taken a meal shortly before the infliction of the injury.

He was not a patient of mine, but, through the kindness of the medical officer of his Regiment, I had the advantage of frequently examining him. The wound was closed by

sutures, but the latter ulcerated out and union did not take place by the first intention but by granulation.

This case was marked by the absence of any severe symptoms, just as in the majority of the cases of wound of the abdomen with protrusion of the intestine which I have related above. It would probably be unwise to make any deductions from such a limited experience; but as it seldom happens that so many cases of lacerated wound of the abdomen come under the notice of any one Surgeon in England, without their being attended with a greater mortality, or, at the very least, with some alarming symptoms, I may perhaps be permitted to conclude that these injuries are of a much less formidable and fatal character when happening to natives of India than amongst Europeans.

Since writing the above I have perused the article "Injuries of the Abdomen," by Mr. G. Pollock, in Holmes's "System of Surgery," Vol. ii. Mr. Pollock quotes a case of Dr. J. Macpherson's of Bengal, in which protrusion of the liver followed a spear wound; a ligature was tied round the base of the protruded portion and the greater part cut off. The patient recovered. Mr. Pollock adds, "We may remark that the natives of India are singularly happy in recovery after surgical operations."

It is to this singular happiness on the part of natives of India that I would, in a very great measure, attribute the favourable termination of the cases I have related; but partly also to the fact that in each instance the wound was sufficiently extensive to permit of immediate protrusion of the viscera, so that no foreign matter was introduced into the abdominal cavity. When the intestine was lacerated I believe the injury occurred after protrusion, or that the protrusion so immediately followed the withdrawal of the puncturing horn that no escape of contents could possibly take place into the abdomen.

I could not conclude this paper more satisfactorily to myself than by giving the following extract from Mr. Pollock's excellent treatise on "Injuries of the Abdomen," above referred to:—

"In concluding his remarks on this portion of the subject, which embraces the consideration of wounds of the viscera, the effects of those wounds, and their treatment, the author ventures to hope that the reader will derive some assistance from the following general summary—a kind of index of results attendant upon these injuries:

"1. That a rupture of stomach or intestine, *without external wound*, is a fatal lesion; more fatal than when lesion of either viscus occurs *with external wound*.

"2. That when rupture of liver or spleen is fatal, death is generally the result of hæmorrhage. Rupture of the gall-bladder is always fatal.

"3. That when rupture of the kidney proves fatal, death, when occurring early, is the result of hæmorrhage; when occurring later, is the result of extravasation of urine.

"4. That recovery from rupture of the liver, spleen, or kidney is not improbable nor uncommon.

"5. That a wound of the peritonæum, without bruise or laceration of tissues, is by no means necessarily fatal.

"6. That a protrusion of intestine, or portion of other viscera, if the protruded part be not bruised, nor long exposed, need not necessarily prove fatal.

"7. That a wound of protruded intestine or stomach, if small, should be secured by ligature—if large, by sutures; and the protruded viscus returned into the abdomen. The former lesion may terminate in recovery; 'but wounds amounting to direct division of the canal are irreparable,' unless artificial anus be established.

"8. That a punctured wound of vicera is more dangerous than a wound with protrusion—less dangerous than rupture without external wound; that the danger is in proportion to the size of the internal wound; and that an artificial anus offers the best prospect of recovery when the wound is extensive."

Note.—When writing of the use of potassæ hydras for the destruction of the unsightly cicatrices of scrophulous sores, I mentioned that I had not seen Mr. P. C. Price's work on Scrophula. Neither was I, at that time, aware that Mr. Price had published a paper *On Tubercular Disease of the External Lymphatic Glands*, in the British Medical Journal, April 6th, 1861. This paper, as printed at page 178—184 of Braithwaite's Retrospect, Vol. xliv, I have since read. As I expected, Mr. Price speaks highly of the potassa fusa as a means of destroying these cicatrices, but he also points out certain forms, conditions and positions of them, in which the judicious use of the knife has been followed by decided advantages. I am quite at one with Mr. Price, and must own that, at the time I was writing, the special circumstances to which he alludes were scarcely present to my mind. I still think that the puckered cicatrices to which I was referring, when of ordinary size and in the usual situation, are most satisfactorily managed by the judicious application of potassæ hydras. Mr. Price is well known as most careful and particular in the after management of the patients upon whom he operates, and it may therefore happen that the cases in which he has used the knife have turned out much more satisfactorily than some of those that I have witnessed. I do not wish to be understood to be making a loophole for the escape of those who are not careful in the after management of their cases—it is to be hoped that no such negligent Surgeons are to be found,—but I merely hint that the object of one's care and attention may be entirely frustrated by the obstinacy and wilfulness of the patient.

Art. X.—*Indian Substitutes for European Medicines.* By George Bidie, M.B., Mysore Farm, Hoonsoor.

[*Continued from page* 50.]

Part II.

CLASS VII.

Diuretics.

Diuretics are always more or less uncertain in their action. In India they are particularly so, owing to the frequent existence of conditions unfavourable to their action. To secure a diuretic action certain precautions must be observed, viz., the dose must not be so large as to excite congestion of the kidney, the skin must be kept cool, congestion of internal organs must be relieved and debility or depression removed. Native practitioners have a long list of medicines to which they ascribe diuretic properties, but hardly any of them, when fairly tested, have been found useful.

Potassæ Nitras.

Pottle ooppoo..... { *Tam.* / *Tel.*

Shora..... *Hind.*

This salt is very plentiful in India, and may be obtained in great purity in almost every bazaar. It is prepared by lixiviating certain kinds of soil, and is purified by repeated crystallization. It is unnecessary to enter here into the chemical properties, appearance, &c., of a salt so well known. In its action as a medicine it is cathartic and diuretic. It enjoys considerable reputation as a remedy in articular rheumatism. It is a pretty certain and powerful diuretic, and has been recommended as peculiarly adapted to the treatment of ascites.

Dose.—From ℈ ii. to ʒ i.

Mylabris Cichorii.

O. Coleoptera.

Telini, Telee Mukhee .. ... *Hind.*

This insect has long been used in Indian hospitals, as a substitute for the cantharis vesicatoria. O'Shaughnessy

states that the M. cichorii is about an inch long and ⅓rd inch broad, and that the elytra are marked with six cross stripes of deep blue and russet brown. This description is totally different from that by Captain Hardwicke in Vol. v., p. 213 of "Trans. Asiat. Soc.," to which O'Shaughnessy refers as giving a good account of the M. cichorii. There is a species of Mylabris, very similar to Hardwicke's, found in abundance in the Mysore country, of which the following are the characters—head gibbous; eyes large, prominent; antennæ with 11 joints, gradually ending in a club, and 11th joint large and ovoid; thorax convex above, broader towards the abdomen, somewhat hairy; elytra crustaceous, about the length of abdomen, convex above, concave below, yellow with 3 transverse, black, irregular and undulating bands, that at the base dividing the yellow into two spots; wings thin, brownish, membranaceous, longer than elytra, tips folded under; first 2 pairs of tarsi 5 joints each, last pair 4 only, last joint in all furnished with pair of claws. When touched the insect ejects, from the joints of its legs, large drops of a yellow oily fluid of an acrid nature. They are very destructive to all the species of Hibiscus, to Roses, &c. When gathered they should be killed by being plunged into vinegar, and then dried in the sun. The month of September is said to be the best time for collecting them, and they should be stored in close stoppered bottles, with a little camphor to preserve them from the attacks of insects. The active properties of the fly are due to the presence of the principle called Cantharadine, which may be obtained from the tincture by distilling off the spirit and crystallizing. It occurs in white scales, tasteless, odourless, very volatile, soluble in alcohol and fixed and volatile oils, and insoluble in water. M. cichorii is a powerful vesicant and irritant, and an acrid poison. In small doses it stimulates the urinary organs, causing diuresis. The tincture is the most convenient form for administration. The formula for its preparation is as follows.

Mylabris cichorii in coarse powder ℥. iv.; Proof Spirit ℥ ii. Macerate the powder with a little of the spirit for 12 hours; then place in percolator and exhaust with remainder of spirit.

Dose.—Of the Pulvis Mylab. cichorii gr. ½ to gr. ii.; of the Tinctura Mylab. cichorii ♏. v., gradually increased to M. xxx.

Cissampelos Pareira.

N. O. Menispermaceæ.

L. S. Dicœcia monadelphia.

Poi mooshtie. }
Vata tirupie. } .....*Tam.* (?)

Climbing shrub ; leaves reniform, round, or broadly cordate, usually obtuse and mucronate, rarely acute, very rarely acuminated, sinus narrow or wide, more or less pubescent ; male flower a cyme, axillary or slightly extra-axillary, long peduncled, many flowered, pilose ; female flower a raceme, bearing large round bracts ; drupe subglobose, hirsute. *Hk. and Th.'s Fl. Ind. Vol.* i., 198.

This is a most variable plant, and it has accordingly an enormous list of botanical synonyms. Wight and Arnott reduced all the Indian forms to C. convolvulacea ; but Hooker and Thomson consider the Indian indentical with the American plant C. Pareira. They say :—" An examination of many hundred flowers having shown that no reliance can be placed on characters derived from them, and the shape of the leaves being manifestly of no value as a character, we have been compelled to conclude that the American and Indian plants are not distinct." This is an important discovery, inasmuch as it shows the existence in India of a valuable medicine, for which we have hitherto been dependent on America. The root, which is the officinal part of this plant, is too well known in English practice to demand any further notice here than to say, that it is a tonic diuretic ; and has a specific action on the urinary organs, arresting discharges from the mucous membrane of the bladder. &c. The Decoction is the preparation in most general use, It is prepared thus : Pareira bruised 3 x. ; pure water O iss. ; boil down to O i. and strain.

Dose.—Of Decoctum Pareira, ʒ i to ʒ iii., three or four times a day.

Dipterocarpus Lævis.*

N. O. Dipteraceæ.

L. S. Polyandria monogynia.

A tree ; young branches compressed, 2 edged ; leaves ovate or oblong-ovate, retuse at the base, acute, shining on

* Several species of this genus yield wood-oil, viz., D. turbinatus, D. alatus, D. costatus, and D. incanus.

both sides, with numerous prominent veins ; petioles glabrous ; tube of the enlarged calyx slightly ventricose but scarcely contracted below the limb, even (without angles) ; capsule ovate, even. *W. and A's. Prod. Vol.* i. 85.

This tree yields the common thin balsam called *gurjun*, or *wood-oil* (Gurjunka, *Tel., Hind.*) To extract it Dr. Roxburgh says, "a large notch is cut into the trunk of the tree near the earth, where a fire is kept up until the wood is charred, soon after which the liquid begins to ooze out." The average produce of a large tree in one season, is said to be about 40 gallons. The trees are operated on during the cold season. The *gurjun* balsam generally occurs as a brown oily looking semi-transparent liquid, with a resinous odour. Its. Sp. gr. is 0·962. It is insoluble in water, freely soluble in hot alcohol, and with difficulty in æther. A portion of the balsam heated in a corked phial, to about 266° F., becomes so firm, that even while hot the phial may be inverted without the balsam escaping, and on cooling the solidification becomes more complete. An essential oil may be prepared from the balsam as follows ;—*Gurjun* balsam lb. i. ; dried Muriate of lime ℥ i. ; agitate well for an hour in a stoppered bottle, and then distil from a capacious leaden bottle. Essential oil of *gurjun* dissolves caoutchouc, copal, vateria resin, and solid gluten. Its taste is acid, sweetish, and heavy, and its odour closely resembles that of the essential oil of copaiba. In medicinal doses it causes a sense of warmth at the epigastrium, eructations and slight purging. It communicates a smell of turpentine to the urine, which it remarkably increases in quantity. It may be regarded as an admirable substitute for the oil of copaiba.*

Dose.—Of Oleum gurjun ♏ x. to ♏ xxx. in mucilage, milk or rice water, three times a day.

CLASS VIII.

Emetics.

Indian bazaars furnish numerous efficient emetics. A common domestic remedy of this kind for children is the *Koopamaynie*, or *Kooppie ke jurr*, the Acalypha Indica, the dose being about a teaspoonful of the expressed juice of the leaves, mixed with a little salt. All over Mysore the poorer

* Vide remarks on the same subject, pp. 114 and 125 of this volume.—Ed. *M. Q. J.*

classes use the dried fruit of Randia dumetorum as an emetic, and it is said to be very safe and certain. The native names are Marukarung kai, *Tam.*, Manga, *Tel.*, and Myn phul, *Hind.*; and the dose one pounded fruit, to be repeated if necessary. The country mustard too forms just as efficient an emetic as the European article, if given in somewhat larger doses.

Cupri Sulphas.

Toorishoo.....*Tam.*
Neelatota, Tutiya.....*Hind.*
Toorishie.....*Tel.*

The Sulphate of Copper is too well known to require a long notice here. It is a certain and speedy emetic, and has accordingly been much used in cases of narcotic poisoning.

Dose.—Of Cupri sulphas gr. xii. to gr. xv. in ʒ ii. of water.

Tylophora Asthmatica.

This plant has already been described in the division *Diaphoretics*. It would appear that the powder of the dried leaf is more certain in its action, than that of the root.

Dose.—Of Pulv. Tylophoræ asth. gr. xxx. to gr. xl.

Calotropis Gigantea.

Described in the division Diaphoretics. The powdered bark of the root is a very efficient emetic, generally acting after an interval of from 20 to 30 minutes. In about one case in three it also exerts a cathartic action.

Dose.—Of Pulv. Calotrop. gigant. ʒ ss. to ʒ i.

Crinum Asiaticum.

N. O. Amaryllidaceæ.
L. S. Hexandria monogynia.

Veshèi moonghie elley..... *Tam.*
Kesara chettu, Visha mungali..... *Tel.*
Burra kanoor, Sookh durson..... *Hind.*

Stemless; root an oblong bulb with a fusiform crown; leaves rigidly linear, concave obtuse, 1—3 feet long, radical; umbels from 10—12 flowered; flowers large, white, subsessile, fragrant at night; corolla tube cylindrical,

coloured or pale green; divisions of the border linear-lanceolate, margins waved a little, a recurved process at the apex of each.—*Roxb.* "*Flor. Ind.*" *Vol.*, ii. 127.

O'Shaughnessy was the first to bring this remedy particularly to the notice of the profession in India, and he states that he was induced to make a trial of it from Dr. Horsfield's account of its emetic virtues in Java. There is some doubt however as to the species of Crinum referred to by O'Shaughnessy, as he says *Crinum Asiaticum*—variety *toxicarium*. Roxburgh however considers the *C. Asiaticum* and *toxicarium* perfectly distinct species, and I quite agree with him in that opinion. As however the description of the plant given by O'Shaughnessy is that of Roxburgh's C. Asiaticum, we may safely conclude that he referred to that species. It is not improbable that both are emetic. It is a very active remedy, inducing vomiting in a few minutes without any untoward symptom. The bulb and colourless bases of the leaves have a heavy somewhat narcotic smell, and are the parts used as an emetic. It is better to use the fresh plant, but the dried sliced roots, in double the dose of the recent roots, are also actively emetic. The Extract, watery or alcoholic, is very uncertain.

Dose.—The juice of from 2 to 4 drachms of the fresh bulb.

CLASS IX.

Epispastics.

Vesicants and rubefacients are very common, and much used by natives; and the highly acrid juice of the Euphorbia tirucalli, and the mild powder of the Curcuma longa are perhaps the remedies of this class most frequently employed. Two very powerful epispastics, the Ammannia vesicatoria and Semicarpus anacardium, are common, but the first is so apt to cause intense pain and the second to excite dangerous inflammation, &c., that neither can be recommended as medicinal agents.

Mylabris Cichorii.

This article has already been described in the division *Diuretics*. Its action and uses are so similar to those of Cantharides, as to require no notice here. An emplastrum and acetum may be made, the former according to the formula of the Edinburgh, and the latter according to that of the

London, College. The emplastrum acts better if spread on brown paper than on leather, and the margin of a plaster should be covered with adhesive plaster to prevent its moving or falling off. In persons subject to irritation of the urinary organs from a blister, a piece of oiled tissue paper should be placed between the plaster and the skin. When irritation is induced the best mode of relieving it is by an opiate. In young and delicate subjects it is better to leave the blister on only for from 2 to 4 hours, and then apply a poultice to bring up the vesications. In children the blisters should not be broken. To keep up the discharge from a blistered surface, a fresh plantain or cabbage leaf will be found an effectual application.

CROTONIS TIGLII OLEUM.

The native names of the Croton plant have been given in the division Cathartics. Croton oil is an admirable counter irritant, producing erythematic redness, a burning sensation and an eruption of small vesicles. It is best applied in the form of a liniment, consisting of one part of croton oil, rubbed up with two or three parts of turpentine, or olive oil. It has also been used for the destruction of nævi; 5 or 6 punctures being made on or around the tumour with a lancet dipped in the oil. Each puncture produces in about 36 hours a small boil, and the boils unite and become covered with white crusts, which in a few days separate leaving an ulcer instead of the nævus. Fewer punctures must be used in a young child, as the operation causes much pain, inflammation and fever.

ANDROPOGON MARTINI.

N. O. Graminaceæ.
L. S. Triandria digynia.

Roussa grass.....*Eng.*
Koobell.....*Hind*

Root perennial; culms erect, 3—6 feet high, smooth, filled with pith; leaves long, tapering to a fine point, smooth and of a soft delicate texture; sheaths shorter than joints in full grown plants; panicles axillary and terminal; spikelets paired with 3 joints; flowers also paired; rachis jointed and woolly; calyx 1 flowered, 2 valved, base girt with wool; coralla one valved; a long black awn occupies the place of the other—*Roxb. Fl. Ind., Vol.* i., 277.

This aromatic grass is abundant in the upper parts of the Deccan, and particularly so amongst the low hills of Berar. Cattle and large game are very fond of it. In Berar during the season in which the Nil-ghaw *(Portax tragocamelus)*, feeds on it, its flesh gets so strongly tainted with the smell of the roussa, as to become unfit for food. A fragrant oil *(Roosa-ka-tel,)* is obtained by distillation from the grass.* In making it, numerous small bundles of the grass are put into a large still. The oil has a pungent aromatic taste and a delightful smell, and is of a light straw colour and quite transparent. It is an excellent rubefacient, causing heat and prickling of the skin. It is a popular and admirable remedy in chronic rheumatism, and in alopœcia following fevers, &c., used as a liminent.

Plumbago Rosea.

N. O. Plumbaginaceæ.
L. S. Pentandria monogynia.

Shencodie vaylie.....*Tam.*
Lal chitra.....*Hind.*

Shrubby; stems many, jointed, striated; leaves alternate, ovate lanceolate, obtuse, short petioled, entire, smooth; petioles channelled, stem clasping, flowers axillary and terminal, corymbose; bracts 3-fold one flowered; calyx covered with stalked glands; corolla hypo-crateriform, with very long and slender tube, lobes of the limb obovate; flowers rose or lavender colour.

This is a very common plant in gardens, and is also to be met with wild in various parts of the country. Under cultivation the colour of the flowers, and other characteristics of the plant become much changed. The whole plant, but especially the root, is highly acrid. Plumbago contains a principle called plumbagin, of an acrid hot taste. Rubbed into a paste with a little flour, the root forms a powerful vesicatory, causing in a quarter of an hour after its application, pain equal to that of a catharides blister. "If removed in half an hour the pain is soon allayed, and in a

* Some have supposed that this oil was the produce of Andropogon calamus aromaticus, the *Calamus aromaticus*, of the ancients; but natives of districts in which it is made have assured me that it is the produce of the grass A. Martini, and I have no doubt on the subject. The precious Spikenard of the Bible is supposed to have been got from A. Iwaran-cusa.

period of 12 or 18 hours a large uniform blister full of serum is occasioned." The plumbago never produces irritation of the urinary organs like cantharides, and the blistered surface heals very readily. In every respect it is an excellent medicinal agent, and deserves much more attention than it has hitherto received.

CLASS X.

Expectorants.

Numerous remedies of this class are in common use, amongst the natives of India. Of these some are nauseant and others stimulating. Others again, such as garlic, are given under the erroneous idea, that because they communicate their peculiar odour to the breath they must be expectorants. Emetics are often administered to children, when expectorants are required, their value in ejecting accumulated pulmonary secretions being well known amongst natives.

Styrax Benzoin.

N. O. Styraceæ.

L. S. Decandria monogynia.

Sambrānia.....*Tam.*
Loobanie ood.....*Duk.*
Sambranie.....*Tel.*
Looban.....*Hind.*

Tree; leaves alternate, oblong tapering to an obtuse point; racemes axillary compound, not villous; fruit one seeded.—*Roxb. Fl. Ind.* ii., 416.

This tree is a native of Borneo, Sumatra, &c., and yields the Benzoin of the London Pharm. Two kinds of the gum are to be met with in India and two in England. Benzoin is a stimulating expectorant, and exercises a specific influence in chronic pectoral complaints. A tincture may be made as follows.

Tinctura Benzoni; take of Benzoin in powder ℥. v.; Aloes ℥. ss.; rectified spirit 2 pints; digest for 7 days, pour off the clear liquor and filter.

Dose.—Of Tinct. Benzoni, ʒ. i. to ʒ. ii.

Anisochilus Carnosus.

N. O. Labiatæ.
L. S. Didynamia gymnospermia.
Karpooravullie..... .....*Tam.*
Sitake pungerie.....*Hind.*

Annual; erect; stem 4 sided, hairy; leaves opposite, petiolate, broad cordate, obtusely serrate, fleshy, rugose, hairy; spikes peduncled, terminal, often panicled; calyx with upper lip ovate ciliated, lower lip truncate; corolla upper lip short, erect slightly 3 toothed; under lip long and concave; flowers lilac.—*Roxb. Fl. Ind.* iii., 23.

This plant is pretty common in Mysore and other parts of the country, and thrives best in the shade of shrubs or rocks. It has a very pleasant smell, and is used by natives to make a liniment, and in infusion. It contains a volatile oil, on which its odour and useful qualities depend. It is a mild stimulant expectorant, and is particularly useful in the coughs of children. An infusion may be made as follows.

Infus. Anisoch. Carn. take of fresh leaves and stems, cut small, ʒ i.; boiling water ʒ x.; infuse for 20 minutes in a covered vessel and strain.

Dose.—Of Infus Anisoch. Carn. ʒ ss. to ʒ ii.

Tylophora Asthmatica.

This plant has already been described in the division Diaphoretics. If administered in small frequently repeated doses, so as to maintain a state of nausea, it forms an admirable expectorant.

Dose.—Of Pulv. Tylophor. Asth. gr. ii. to gr. x.

CLASS XI.

Narcotics.

Drugs of this class are so abundant in every bazaar in India, that the practitioner may at all times consider himself independent of extraneous supplies.

Papaver Somniferum.

N. O. Papaveraceæ.
L. S. Polyandria monogynia.
Casa casa.....*Tam.*
Post.....*Hind.*

Stem smooth, glaucous; leaves amplexicaul, repand, cut

and toothed; teeth somewhat obtuse; capsules obovate or globose, and the calyx glabrous.—*W. and A.'s Prod. Vol.* i., 17.

The small white seeds of the poppy are to be found in every bazaar, being a common ingredient in curry powders. If they possess any narcotic property it must be very slight. The capsules however contain opium, and owe their efficacy as medicinal agents to its presence. The officinal preparations of the capsules do not require any notice here. Opium is the inspissated juice of the capsules, and an account of the mode of its preparation will be found in any work on Materia Medica. The native names of opium are, Apini, *Tam.* and *Tel.*; Afeem, Ufeem, *Hind.* Three kinds of opium are produced in India, viz., *Bengal, Garden Patna and Malwah,* of which an admirable description will be found in that invaluable work "Christison's Dispensatory." *Garden Patna* is considered the best, and *Malwah* the next best of the three species, the *Bengal* being soft, black and inferior. The therapeutical effects of opium require no notice here.

Dose.—Of Opium gr. i. to gr. iii.

Datura Alba.

N. O. Solanaceæ.

L. S. Pentandria monogynia.

Vellay oomatay.....*Tam.*

Dhatoora.....*Hind.*

Annual; leaves ovate, acuminated, repandly toothed, unequal at the base, and are, as well as the stem, smoothish; fruit prickly.—*Wight's Icones, Fig.* 852.

This plant is well known, and common in all parts of the country; and it is often made use of for nefarious purposes. Leaves and seeds are powerful narcotics, producing, in medicinal doses, effects very similar to those of Belladonna; and an extract of the datura might often be substituted for that of the more costly exotic. The expressed juice of the leaves yields an excellent extract, which keeps well and would seem to be as certain as, and more manageable than, the spirituous extract of the seeds. A specimen of the former, made at Hoonsoor, was submitted to trial in the General Hospital, Madras, in a case of phthisis, and Mr. Blacklock reports "that it acted favourably on the dyspnœa, and had much the same effect as ½ grain doses of Belladonna." It

was given in doses of two grains each. In cases of asthma, the leaf is smoked in a pipe or rolled up in a cigar, but it should be used with great caution, as it has often produced dangerous symptoms. To make the Extract Daturæ Alb ;—take of Datura leaves, fresh, any convenient quantity ; beat them into a uniform pulp in a mortar and express the juice. Let this juice be evaporated, in shallow vessels exposed to the sun, to a proper consistence.

Dose.—Of Pulv. Daturæ (leaves) gr. i. to gr. iv. (seeds) gr. ¼ to gr. i. ; for smoking gr. x. to gr. xx. of dry leaf. Ext. Daturæ Albæ. gr. i. to gr. iii.

Cannabis Indica.

N. O. Cannabinaceæ.
L. S. Diœcia pentandria.

Gunja.....*Tam.*
Ganjayi.....*Tel.*
Ganja.....*Hind.*

Annual, 3 feet high, diœcious ; covered all over with a fine pubescence ; stem erect, branched, angular ; leaves alternate or opposite on long weak petioles, digitate, and scabrous, with linear, lanceolate sharply serrated leaflets, tapering into a long smooth entire point; stipules subulate cluster of flowers axillary, males lax and drooping, females erect ; calyx five-parted, ovary roundish with pendulous ovule ; achenium ovate, one seeded.—*Lind. Flor. Med.*

This plant has long been known in India and various other Eastern countries, as yielding intoxicating preparations. It would appear to flourish best in India at an elevation of not less than 4,000 feet above the sea, but may in low moist situations be reared on the plains. It would seem to be identical with the C. sativa, except that the European plant does not secrete any resin. The dried plant which has flowered, and from which the resin has not been extracted is called *Gunjah.* In colour this substance is dusky green, resinous, adhesive to the touch, and of an agreeable narcotic odour. It is only used by natives for smoking ; one tolah weight (180 grs.) slightly mixed with tobacco is put into a pipe, and this is considered enough for three persons. It acts almost immediately after the inhalation of the smoke, producing heaviness, laziness, and pleasant reveries; the person being easily roused and able to perform routine duties. The leaves and capsules without the stalks are called *Bauz. Subjee*

or *Sidhee-Baug*; this is used chiefly for making an intoxicating drink and confection, but sometimes for smoking. Indulgence in it is followed, in about half an hour, by intoxication of the most pleasant kind, causing the person to dance, sing, and eat with great relish, and exciting aphrodisiac feelings. The intoxication lasts for about three hours and is followed by sleep. The resinous exudation of the plant is called *Churrus*. It is collected when the plant is in flower, and made into balls about the size of a hen's egg. *Churrus* is a hard resin of a blackish gray colour, having a narcotic odour and a warm slightly bitter taste. Besides the resin it contains dust and fragments of the plant. The medicinal virtues of C. Indica depend on the presence of this resin, which is soluble in rectified spirit. Given in medicinal doses the preparations of Indian hemp are first stimulant, then narcotic. When sleep passes off there is no nausea, loss of appetite or constipation, but slight vertigo. Although in India it is so powerful to relieve pain and spasm and produce sleep, in Europe, strange to say, C. Indica has proved a very uncertain remedy. In cases of threatened abortion with slight hæmorrhage it has, in small frequent doses, proved a very valuable agent. The preparations are an *Extractum Cannabis* and *Tinctura Cannabis*. The extract may be made by boiling the rich adhesive tops of *Gunjah* in rectified spirit, until all the resin is dissolved out, and then distilling off the superfluous spirit. The Dublin College gives an excellent formula. The Tincture is made by dissolving gr. iii. of the extract in ʒ i. of proof spirit.

Dose.—Of Extract Cannabis gr. ½ to gr. i.; of Tinct. Cannabis ♏ x. to ʒ i.

CLASS XII.

Sedatives.

Sedatives may be defined as medicines which directly depress the vital powers, without any previous excitement. They are often classed with narcotics, and in theory it is doubtless difficult to draw a distinct line of separation between them, although in practice they are always regarded as essentially different. Besides indigenous sedatives we have Digitalis, which, with very little care, thrives well in various parts of India.

Aconitum Napellus.

N. O. Ranunculaceæ.
L. S. Polyandria trigynia.

Stem erect, 2-3 feet; leaves many parted; raceme terminal, dense or lax, sometimes compound at the base (in alpine regions few flowered); flowers blue, helmet hemispherical gradually prolonged into a short beak; claw of the petals incurved, filiform; spur short obtuse, sometimes very short; follicles 5 tomentose, erect; seeds triangular, smooth.—*Hk. and Th.'s Flor. Ind. Vol.* i, 57.

This is a very variable plant. It is found in the Himalaya, Nepaul, Sikkim, &c. It is frequently cultivated in borders in England, and when in flower is highly ornamental. It receives its specific name from the resemblance of its root, to the French turnip or napus. There is a root sold in most bazaars called *Bish, Bikh, Nabee or Uasah nabee,* which has generally been supposed to be that of Aconitum ferox; but Hooker and Thomson, in their Flora Indica, show that it is derived from various species of aconitum. They say:—"So far as our experience goes A. napellus, ferox, palmatum, and luridum are all extensively used as Bikh, and are indiscriminately called by that name throughout the Himalaya. We have not detected any characters by which the dried roots of these species can be specifically recognized, nor do we believe that any such exist." The root called *Bikh* or *Nabee* is, as met with in the bazaars of Southern India, generally broken into small pieces. It is dark brown and wrinkled outside, and light gray and waxy looking internally when recently broken. It is very brittle, and flies in pieces under the edge of the knife like sealing wax. It is never touched by insects. It has sometimes a very faint narcotic odour, and is slightly bitter to the taste, subsequently producing numbness and tingling of the mouth. Aconite root yields its active principle completely to alcohol, but imperfectly to water. In undue quantity Aconite is a most virulent poison. As a medicine it is a direct sedative of the nerves of sensation, and may be safely used even under the presence of acute inflammation. In acute rheumatism the alcoholic extract, in free doses frequently repeated, has been found to give immediate relief and ultimately effect a cure. In neuralgic affections the tincture applied externally promptly mitigates the pain. Dr. Neligan employs the tincture "with decided

benefit in painful affections of the stomach, whether dependent on organic disease or not." Fleming's tincture has been successfully employed in tetanus.* Formulæ for making the various preparations will be found in any work on Materia Medica.

Dose.—Of Extract: Aconiti (L. and E.) gr. ii. to gr. viii.; of Extract: Alcoholicum Aconiti (Fleming) gr. $\frac{1}{6}$ to gr. $\frac{1}{3}$ thrice daily; of Tinctura Aconiti (L.) ♏ x. thrice daily; of Tinctura Aconiti (Fleming) ♏ iii. to ♏ vi. thrice daily.

Nicotiana Tabaccum.

N. O. Solanaceæ.
L. S. Pentandria monogynia.
Poghei elley.....*Tam.*
Pogaku.....*Tel.*
Tambaku.....*Hind.*

Annual; stem 3 to 6 feet high, erect, round, hairy, and viscid; leaves sessile, very large, ovate or lanceolate, acuminate, lower ones decurrent, viscid, pale green; bracts linear, acute; flowers panicled, terminal; calyx tubular, swelling, hairy, glutinous; corolla funnel shaped, throat inflated, ventricose, limb spreading, plicate, with 5 cleft acuminate segments; style long, stigma emarginate; capsule 2 celled: seeds numerous, small.

This plant is reared every where, and if proper care was paid to its cultivation and the preparation of the leaf, India might furnish tobacco equal to any in the world. As a luxury tobacco is used alike by the most cultivated and savage nations, by the prince and the beggar, the student and the son of toil earning his bread by the sweat of his brow. The total annual production of the plant is reckoned to be about 2,000,000 tons, which, at the value of 2 pence per lb. would amount to £37,000,000 Stg. In Britain the consumption in 1851, was at the rate of 16·86 oz. for every man, woman and child of the population! The question of the hurtfulness or otherwise of the habitual use of tobacco, has often been keenly discussed, but to little purpose; its defendants having always been interested parties, and its opponents generally holding extreme views. This much seems certain

* See Dr. Smith's "Case of Traumatic Tetanus," Madras Quarterly Journal of Medical Science, Vol. ii, page 86.

that all in good health, not accustomed to its use, are better without it. Tobacco yields its active properties readily to hot water or spirit. It possesses an alkaloid *nicotina*, and a volatile oil *nicotianin*. The infusion of tobacco would appear chiefly to affect the heart, and its smoke to act on the brain. The action of both in small doses is locally stimulant and remotely sedative. In full medicinal doses it is a powerful sedative of the cerebral functions, and of the vascular system. In habitual smokes indulgence in their favourite weed has great power in allaying the pangs of hunger, and in removing exhaustion, listlessness and restlessness; especially when brought on by bodily or mental fatigue. It is employed in the form of enema in stricture or obstruction of the bowels, strangulated hernia, retention of urine from obstructions in urethra or ureters, obstinate constipation, severe colic and tetanus; in all of which its beneficial effects depend on its power of relaxing muscular fibre. The dose for an injection should never in any case exceed a scruple, as even 3 ss. has proved fatal. If the enema does not come away in 5 minutes, it should be aided by throwing up warm water, and, in case of undue depression resulting, ammonia or even brandy ought to be freely given. The officinal preparations of tobacco are Enema Tabacci and Vinum Tabacci.

Dose.—Of Vinum Tabacci ♏ x. to ♏ xl.

CLASS XIII.

Stimulants.

India affords numerous remedies of this class. Indeed very active stimulants are daily consumed by every native as condiments; forming necessary elements in diet, owing to the immense quantities of rice with which they gorge their stomachs. It is also a painful fact, that excessive indulgence in intoxicating substances is daily becoming more common amongst natives of all ranks and creeds. Spirits are prepared in India from various products of the vegetable kingdom, but it is unnecessary to notice these here further than to remark that good rice arrack, matured by age, is at all times an efficient substitute for brandy. Most works on Materia Medica divide stimulants into *General* and *Special*, but such an arrangement is not considered necessary here. The following Indian stimulants being noticed in the British

Pharmacopœias, it is not necessary to do more than give their vernacular names.

Ammoniæ hydrochloras.	Navacharum	*Tam.*
	Nowshader	*Hind.*
Anisum	Somboo	*Tam.*
	Sonf	*Hind.*
Acorus calamus	Vassamboo	*Tam.*
	Buch	*Hind.*
Camphora	Carpoorum, Soonun	*Tam.*
	Kupoor	*Hind.*
Capsicum	Mollaghai	*Tam.*
	Mirapa kaya	*Tel.*
	Lal mirchie	*Hind.*
Cardamomum	Yaydersie, Aila cheddie	*Tam.*
	Eelachie	*Hind.*
Caryophyllus	Crāumboo	*Tam.*
	Lāong	*Hind.*
Cassiæ cortex	Lavanga puttay	*Tam.*
	Tuj	*Hind.*
Cinnamomum	Karruwā puttay	*Tam.*
	Darchinie	*Hind.*
Coculus Indicus	Kaka collie verei	*Tam.*
	Kaki champa	*Tel.*
	Kakmari ka beenge	*Hind.*
Coriandrum sativum	Cottamillie	*Tam.*
	Dhaniyalu	*Tel.*
	Dunya	*Hind.*
Limonum cortex	Elimitchum pullum	*Tam.*
	Nimma	*Tel.*
	Neemboo	*Hind.*
Myrrha	Velatipolum	*Tam.*
	Balintra bolum	*Tel.*
	Heera bol	*Hind.*
Myristica moschata	Jadicai	*Tam.*
	Jaji kaya chettu	*Tel.*
	Jaephal	*Hind.*
Piper longum	Tipilie	*Tam.*
	Pipali katte	*Tel.*
	Pipel, Pipilie	*Hind.*
Piper nigrum	Mellaghoo	*Tam.*
	Gol-mirch, Kali-mirchie	*Hind.*
Zingiber	Sookkoo	*Tam.*
	Sonthi	*Tel.*
	Sont	*Hind.*

Nux vomica..... { Yetti cottay.....*Tam.*
Musidi.....*Tel.*
Koochla.....*Hind.*

Ptychotis Ajowan.

N. O. Umbelliferæ.
L. S. Pentandria digynia.

Womum.....*Tam.*
Ajwan.....*Hind.*

Annual; stem erect, dichotomous; leaves few, cut into numerous linear or filiform segments; the uppermost simply pinnate; umbel with 7—9 rays; involucre few-leaved; leaflets linear entire; fruit strongly ribbed, covered with small blunt tubercles.—*Wight and Arn. Prod. Vol.* i, 368.

A common cultivated plant, the seeds of which are to be found in every bazaar. They are considered by natives as stomachic, cardiac and stimulant. Womum water, prepared by distillation, is in India a favorite and useful domestic remedy in colic, diarrhœa, &c. The seeds have an agreeable aromatic smell and an extremely pungent taste. They yield a colourless, very fluid volatile oil; which however soon becomes yellow, if not very carefully kept. This oil is very soluble in alcohol, but less so in water, floating on the surface. It is a powerful aromatic stimulant, and in many cases a far superior remedy to either dill or anise. It must always be rather expensive, as the percentage yielded by the seeds is extremely small. The oil is prepared according to the general directions for the preparation of volatile oils, in the Lond. Pharm.

Aqua Ptych. Ajowan.—The Ajowan seeds well bruised ʒ xviii.; rectified spirit ʒ iii.; water O ii.; mix them togegether and distil off one gallon.

Dose.—Of Oleum Ptych. Ajowan ♏ i. to ♏ iii.; of Aqua Ptych. Ajowan ʒ ss. to ʒ ii.

Toddalia Aculeata.

N. O. Xanthoxylaceæ.
L. S. Pentandria monogynia (?)

Molakarunnay..... *Tam.*
Mirapa kandra, Konda casinda.....*Tel.*

Scandant shrub; stem and branches prickly; leaflets sessile, from oblong to broad lanceolate, crenulate, glabrous, closely

pellucid-dotted; midrib beneath and petioles prickly or occasionally unarmed; racemes simple or compound; fruit 5-furrowed, with 3—5 perfect cells.—*Wight and Arn. Prod. Vol.* i, 149.

This shrub is pretty common in Southern India, growing on the sides of old lanes, twining up hedges, &c. It is very common in the western districts of Mysore. Every part of the plant has a pungent bitter taste, and agreeable aroma, and the root particularly so. The ripe fruit is highly pungent and has a peculiar very pleasant aroma, qualities which might make it a cheap but excellent substitute, as a condiment, for black pepper. The dried bark of the root is of a yellowish brown colour, and retains its pungency and bitter taste for a long time. In a specimen dug six months ago, I cannot detect any diminution of these qualities. The whole plant possesses active stimulant and febrifuge properties; and would also prove an admirable stimulating bitter tonic, where such is indicated. Roxburgh says:—"The fresh bark of the root is administered by the Telinga physicians for the cure of that sort of remittent, commonly called the hill fever. I conceive every part of this plant to be possessed of strong stimulating powers." He also remarks:—"The fresh leaves are eaten raw for pains in the bowels." The bark of the root may be administered in the form of Tincture or Infusion.

Tinctura Toddaliæ.—Take of powdered root bark of Toddalia ʒ ii.; place in percolator and exhaust with O i. of proof spirit.

Infusum Toddaliæ.—Take of bruised root bark of Toddalia ʒ i.; boiling water O i.; macerate in a close vessel for three hours and strain.

Dose.—Of Tinctura Toddal. ʒ ss. to ʒ iii.; of Infus. Toddal. ʒ ss. to ʒ ii.

Moringa Pterygosperma.

N. O. Moringeæ.

L. S. Decandria monogynia.

Mooringhy.....*Tam.*
Munaga.....*Tel.*
Sujna, Mungay.....*Hind.*

Tree; leaves twice or thrice pinnate with an odd leaflet; calyx 5-partite; œstivation slightly imbricated; petals 5 nearly equal, the upper one ascending; 5 stamens without

anthers; capsules triquetrous; seeds 3-angled, the angles expanding into wings.—*Wight and A.'s Prod. Vol.* i, 178.

This very common tree is well known under the English name of the *Horse-raddish tree.* The legumes are used as an ingredient in curries, and the seeds yield the famous *Ben-nut oil,* much in demand by watchmakers as it does not congeal or get rancid. It is also used by perfumers, having the properties of extracting and retaining the volatile odours of such flowers as the jessamine. The fresh roots, when bruised or cut, have an acrid penetrating odour and pungent taste, which seem to depend on a volatile oil similar to that of armoracia. Moringa root is a powerful sialogogue and active stimulant, and would seem also to possess diuretic properties. Ainslie says it is used by natives as a stimulant in paralysis and intermittent fever, in doses of ʒ i., and that they also employ it as a rubefacient in palsy and chronic rheumatism. It forms a perfect substitute for armoracia in the Infus. Armor. Comp., and in the Spiritus Armor. Comp. of the London College.

Mentha Sativa.

N. O. Labiatæ.
L. S. Didynamia gymnospermia.
Widdatilam.....*Tam.*
Poodina.....*Hind.*

Herbaceous; leaves petiolate, elliptical, serrate, the upper ones similar but smaller, all longer than the whorls; calyx tubular or bell-shaped, with triangular lanceolate teeth; stamens longer than the coralla.—*Roxb. Fl. Ind. Vol.* iii.; 6, *&c.*

Mint is to be found in most gardens. It is not very easy to determine the species of the plant as found in India; for cultivation and climate, it not being a native of the country, have greatly changed its natural characters. Roxburgh refers it to the M. sativa, and in this I have followed him, as it would appear to be a variety of that species. It has an agreeable odour like the other members of the genus, but it wants the peculiar aroma of, and does not leave a sense of coolness in the mouth like the peppermint. In taste it is warm, slightly bitter. In its action mint is an aromatic stimulant, useful to cover the taste of nauseous medicines, and powerful to relieve sickness of stomach and vomiting. An infusion is an useful preparation.

Infusum Menthæ Sativæ.—Take of mint dried and cut

small ʒ iii.; boiling water O i.; infuse for 15 minutes in a covered vessel and strain. Oleum Menthæ Sativæ, Spiritus Menthæ Sativæ, Essentia Menthæ Sativæ, and Aqua Menthæ Sativæ may be made in the same manner as the corresponding preparations of peppermint, and the doses will also be the same.

Dose.—Of Infus. Menth. Sativæ ʒ i. to ʒ ii.

Nigella Sativa.

N. O. Ranunculaceæ.
L. S. Polyandria pentagynia.

Carin siragum.....*Tam.*
Kala jira.....*Hind.*

Herbaceous, erect, 1—2 feet; many flowered, downy; leaves decompound; petioles downy, flowers naked, dirty white; anthers ovate, obtuse; capsules muricated, united up to the point into an oval fruit, terminated by 5 erect styles. —*Beng. Disp.* 164.

This plant is not a native of India, but extensively cultivated, and its seeds are procurable in every bazaar. They are supposed to be the cummin mentioned in Isaiah xxviii. 25, 27. They are small, conical, rugose, dark brown and have a slight aromatic odour due to an essential oil. They are used by natives both as a medicine and condiment. O'Shaughnessy says:—"They are given to nurses in the belief that they increase the flow of milk, and facts have been laid before us which tend to corroborate that opinion." Ainslie remarks that, amongst other uses, "they are prescribed as an external application, mixed with gingilie oil in eruptions of the skin." Nigella seeds are a stimulating aromatic tonic, useful in debilitated states of the digestive organs, and in diseases attended with undue secretion from mucous membranes. They may be prescribed either in powder or in tincture.

Tinctura Nigella.—Take of Nigella seeds in moderately fine powder ʒ iv.; proof spirit O ii.; pack the powder gently in a percolator and exhaust with the spirit.

Dose.—Of Pulv. Nigellæ gr. x to gr. xxx.; of Tinct. Nigellæ ʒ i. to ʒ ii.

Dipterocarpus Lævis.

This plant and its balsam the *gurjun* have already been described, under the division Diuretics. With regard to

the essential oil prepared from the balsam O'Shaughnessy says, that in the treatment of gonorrhœa, &c., he found it nearly equal in efficacy to copaiba. Essential oil of *gurjun* is a special stimulant of mucous membranes, particularly those of the urinary organs. It may be given in the same manner and with the same precautions as Oleum Copaibæ.

Dose.—Of Oleum Goorjun ♏ x. to ♏ xxx.

Oleum Jecoris Piscis.

Fish liver oil has for years been used in Indian hospitals, as a substitute for cod liver oil. It would appear to be prepared from the livers of various species of the Raiidæ, and of the Carcharias vulgaris and C. glaucus. The best oil is prepared by boiling the livers in water. It has always a disagreeable smell and very nauseous taste, most offensive to a weak stomach. From extensive observations made by me on the preparation of cod-liver oil on the large scale, I am convinced that much of the offensive smell and taste of Indian fish liver oil depends on the livers being allowed to putrefy, before the oil is extracted from them. Fish liver oil seems almost indentical in its composition with cod liver oil, the virtues of which have been supposed to depend on the presence of iodine, chlorine, phosphorus and bromine, naturally combined in an animal oil, which is very readily assimilated in the human economy. When of good quality fish liver oil is a most valuable medicinal agent in phthisis, chronic rheumatism, rickets, scrofulous abscess and caries, tabes mesenterica, arthritis, strumous ophthalmia, &c. During its administration the patient should breathe pure air, have liberal diet, and if practicable take light exercise out of doors. The dose must at first be small, and it is best administered floating on water containing a strong aromatic tincture. Notwithstanding every precaution however it is apt at first, with most patients, to cause sickness and often diarrhœa. During its internal administration the oil may also, with the best effect, be freely rubbed into the skin over the chest or abdomen. It is very slow in its action, and to obtain any marked benefit its use must be persevered in for months or even years.

Dose.—Of Oleum Jecor. Pisc. ʒ ii., gradually increased to ʒ ss. three times a day.

Calotropis Gigantea.

This plant has already been described in the division Diaphoretics.

Its root bark was at one time supposed to be highly useful in lepra, but recent experience has not confirmed that opinion. There can be no doubt however that it possesses considerable efficacy in secondary syphilis, and various obstinate diseases of the skin. Playfair considered it alterative, stimulant and deobstruent.

Dose.—Of Pulv. Calotrop. Gigant. gr. v.; three times a day.

CLASS XIV.

TONICS.

We shall first give the vernacular names of some tonics, common in India, that are recognised in the London Pharmacopœia; and then proceed to notice others of which less is known.

Arsenicum album.... { Vulla pashanum.....*Tam.*
Suffaid soombul.....*Duk.*
Sumboolkhar.....*Hind.*

Agathotes chirayta.... { Shayraet coochie.....*Tam.*
Chiraeta.....*Duk.*

Cupri Sulphas.....*(See Astringents.)*
Ferri „ .....*(See Astringents.)*
Myrrha .....*(See Stimulants.)*

EXACUM BICOLOR.

N. O. Gentianaceæ.
L. S. Tetrandria monogynia.

Annual; erect; stem 4-angled; leaves sessile, ovate, subacute, 5-nerved, with smooth margins; calyx 4-cleft, segments subulate, with ovate-lanceolate wings; corolla white tipped with blue.—*Wight's Icones, Fig.* 1321. *Roxb. Fl. Ind. Vol.* i, 397.

E. TETRAGONUM.

Oodachiretta.....*Tam.*
Koochuri.....*Beng.*

Annual; stem tetragonal, smooth; leaves opposite, decussate, sessile, lanceolate, 5-nerved, smooth and shining; calyx divided nearly to the base into 4 daggered segments; petals oblong, acute, spreading; flowers terminal, numerous, large, of a most beautiful blue colour; capsules 2-celled, 2-valved. *Roxb. Flor. Ind. Vol.* i, 398.

E. Pedunculare.

Annual, small; stem erect, ramous, 4-sided; leaves lanceolate, corymbs nearly naked (not leafy); coralla 4-cleft, segments oval, capsule glabose; flowers blue with golden anthers.—*Wight's Icones, Fig.* 336.

Some one of these three species is to be met with in most districts of the Peninsula. The E. tetragonum would seem to be the best known, but the E. bicolor is most widely distributed. The E. pedunculare is very common in the western districts of Mysore, appearing in the cold season, behind the bunds of tanks, or amongst the long grass of swamps. Root, stem, branches, &c. all possess the virtues of the order, and the plants should be gathered just as the flowers begin to fade and carefully dried in the shade. All three species have a strong bitter taste and very faint aroma. They seem almost identical in composition with the Officinal Gentian, for which they may always be substituted. Their bitter is not so strong and harsh as that of the Chiretta; but, like it and the Gentian, they are all powerful purely bitter tonics. The infusion and tincture may be made as follows.

Tinctura Exaci.—Take of Exacum well bruised ʒ v.; proof spirit O i.; macerate for 14 days, strain, express and filter.

Infusum Exaci.—Take of Exacum well bruised ʒ iv.; boiling water ℥ x.; infuse for two hours and strain.

Dose.—Of Tinct. Exaci ʒ i. to ʒ ii.; of Infus. Exaci ℥ i. to ℥ ii.

Ophelia Elegans.

N. O. Gentianaceæ.
L. S. Tetrandria monogynia.

Erect, ramous above, obsoletely 4-sided; leaves sessile, narrow, ovate, lanceolate, tapering to a slender point, 3-nerved, lateral ones close to the margin; branches ascending slender, bearing at each joint lateral, few flowered cymes, forming together a large, many flowered, leafy panicle; calyx lobes narrow lanceolate, acute, about ⅔ the length of the corolla, lobes of the corolla obovate, cuspidate; foveæ bound with longish coarse hairs; flowers pale, blue, streaked with deeper coloured veins.—*Wight's Icones, Fig.* 1331.

This plant is very abundant amongst the hills of the Northern Circars, and is also found on the Pulneys, &c.

In the Circars, where its virtues are well known and highly appreciated, it is sold in small bundles containing stems and branches. Like the other members of the order it is a pure bitter tonic, and is highly useful in cases of dyspepsia, unaccompanied with irritability or inflammation of the stomach.

Infusum Ophel. elegant; take of Ophelia bruised ʒ iii., boiling water, ʒ x.; infuse for 2 hours and strain.

Dose.—Of Infus. Ophel. ℥ i. to ℥ ii.

ANDROGRAPHIS PANICULATA.

N. O. Acanthaceæ.

L. S. Diandria monogynia.

Kiriat, Nela-vembu,.....*Tam.*
Nela vemu.....*Tel.*
Kalupnath, Maha tita.....*Hind.*
Creat.....*Duk.*

Annual, erect; stem 4-sided, jointed, smooth; leaves opposite, short petioled, lanceolate, entire smooth; bracts a large exterior opposite pair, within the flower bearing one there are two smaller embracing the base of the pedicels; corolla bilabiate, tube recurved, lips linear and reflected, the superior broadest, 3 toothed, the inferior 2 toothed; flowers remote rose coloured, long pedicelled, alternate erect, downy; capsules erect, subcylindrical.—*Roxb. Fl. Ind. Vol.* i, 117

Ainslie states that this plant, formerly known as the *Justicia paniculata* was first brought to the southern parts of the peninsula, from the Isle of France; but as has been pointed out by Roxburgh and others, it abounds in many parts of India. It is cultivated in Tinnevelly. The whole plant is intensely bitter, and yields its properties readily to water or spirit. It is a powerful bitter tonic; and has been used in cases of dysentery. It is said to have formed the basis of a once famous nostrum, the *Drogue amere,* which consisted of mastic, frankincense, resin, myrrh, aloes and Creat root steeped in brandy for a month, so as to form a compound tincture. An infusion may be made according to the formula of the London College, for the preparation of the Infusum Chirettæ.

Dose.—Of Infus. Creat. ℥ i. to ℥ ii.

Guilandina Bonduc.

N. O. Leguminosæ.
L. S. Decandria monogynia.

Kalichikai.....*Tam.*
Gaccha chettu.....*Tel.*
Nata caranja.....*Hind.*
Gudgega, Gutchka.....*Duk.*

Large climbing shrub; leaves abruptly bipinnated, leaflets oval or ovate, more or less pubescent, 3—8 pair, with 1—2 small recurved prickles between them on the under side; flowers yellow spicately racemose; sepals 5 nearly equal, combined at the base into a short urceolate tube; petals 5 sessile, nearly equal; legume ovate, ventricose compressed, two valved, 1—2 seeded, covered with straight prickles; seeds bony, shining, nearly globose.—*Wt. and A.'s Prod. Vol.* i, 280.

This formidable thorny shrub forms an impenetrable fence for fields and gardens, and its seeds may sometimes be seen strung together as beads or used as substitutes for marbles. The seeds are not unlike a small bird's egg, and of a beautiful slightly variegated gray colour. The kernel yields oil, starch, sugar and resin, and has an intensely bitter taste. It has long been reckoned a powerful tonic, and to possess considerable virtue as a febrifuge. Ainslie also states, that when pounded small and mixed with castor oil it forms a valuable application in incipient hydrocele. The root of the plant is also thought to have febrifuge properties.

Dose.—Of Pulv. Guiland. Bonduc gr. iv. to gr. x., mixed with from gr. iii. to gr. v. of black pepper.

Aconitum Heterophyllum.

N. O. Ranunculaceæ.
L. S. Polyandria trigynia.

Atees.....*Hind.*

Shrub 1—3 feet; root fusiform; stem erect, leafy, simple or branched, smooth below, pubescent above; leaves scarcely lobed; racemes many flowered, simple; flowers yellowish white or blue, hood of petals ecalcarate; follicles 5 erect, seeds sharply triquetrous, smooth.—*Hk. Th.'s Flor. Ind. Vol.* i, 58.

The root of this species of aconite is now to be met with in every bazaar, and the plant is said to be found in various

hills in the Nizam's dominions, as well as in the Himaylaya. Its properties do not seem to have been long known in India, as it is not noticed in Ainslie's Mater. Ind. It is generally procured in small, irregular, tapering pieces, ash coloured externally, white internally, much bored by insects and of a very bitter taste. Natives consider it tonic, febrifuge and aphrodisiac. It has also been highly recommended by English practitioners in India as a febrifuge, but would seem to be of very doubtful efficacy. In my own experience it was found quite useless as a febrifuge, although procured quite fresh. It may however be advantageously used as a bitter tonic. It is quite free from the noxious qualities of the other species of the genus.

Dose.—Of Pulv. Atees gr. viii. to gr. xii., 3 or 4 times a day.

Berberi Lycium.

N. O. Berberideæ.

L. S. Hexandria monogynia.

Small stiff shrub; spines somewhat trifid; leaves narrow or obovate-lanceolate, quite entire or with sharp thorny teeth, pale, under surface glaucous; flowers a corymb-like raceme; pedicels elongated; berries ovoid crowned with the distinct style.—*Hk. and Th.'s. Fl. Ind. Vol.* i, 225.

B. Napaleusis.

Shrub 3—6 feet; stem erect; leaves pinnate; petiole articulate, at the base dilated sheathing with a subulate stipule on both sides; leaflets 2—12 pair with thorny teeth; flowers disposed in erect racemes simple or divided at the base.—*Hk. and. Th.'s Fl. Ind. Vol.* i, 219.

There is not perhaps in the domain of Botany, a genus concerning the species of which such different opinions have obtained, as those of Berberis. The fact is the plants of this species are remarkably sportive in habit and characters; elevation, temperature and humidity by their influences giving rise to an infinity of forms. With a small herbarium therefore it was impossible for any botanist, however expert, to produce any thing like a satisfactory arrangement of these, or to give adequate definitions of species. Hence the confusion that prevailed, until Hooker and Thomson with large suites of specimens, collected with a view to show variations, produced in their Flora Indica a better arrangement, from

which few will dare to differ. Only two or three species demand notice here as medicinal agents. The B. Lycium, a native of the Himalayas, is the chief source of the extract called Rusot, which Dr. Royle has identified with the Λυκιον Ινδικον of Dioscorides. This substance is also said to be obtained from B. Nepalensis, and B. aristata. Two species are noticed in Wight and Arnott's Prodromus as natives of Southern India, viz., the B. Leschenaultii and B. tinctoria. Both of these have been reduced, and the former referred to the B. Nepalensis and the latter to the B. aristata. They are found at elevations of from 6 to 8,000 feet above the sea, on the Neilgherries, and possess the same properties as the Himalayan plants. Rusot is prepared from a decoction of the root, stem and branches of the Berberis. It is a pale yellow, pasty extract, exceedingly bitter and of a rich heavy smell. It is soluble in water and alcohol communicating to them a brilliant yellow colour, is blackened by salts of iron and precipitated by solutions of gelatine. The bitterness of Rusot depends on a principle called by its discoverer Buchner, and by O'Shaughnessy, Berberite. The latter says regarding this substance;—"It is a light powder formed of minute silky yellow needles devoid of smell, excessively bitter, little soluble in cold water, but hot water dissolves it freely; soluble also in alcohol, insoluble in either. It has no alkaline or acid properties." Rusot is chiefly used by natives as an external application, in incipient or chronic ophthalmia; being applied around the eye alone, or mixed with equal parts of alum and opium and diffused in water. Royle, Playfair, &c., speak in favorable terms of this practice. Rusot is also a powerful tonic and febrifuge. "It occasions a feeling of agreeable warmth at the epigastrium, increases appetite, promotes digestion, and acts as a very gentle, but certain aperient. The skin is invariably moist during its operation."

It never induces headache or constipation, and would appear in all forms of malarious fever to be a safe and speedy remedy, which might, in a multitude of cases, form a substitute for Cinchona and its preparations. A Tincture of Barbery is highly spoken of by Mr. Stewart, at p. 343, Vol. ii, of this Journal. To make the extract of Berberis;—take of root and bark any convenient quantity, bruise them well and pour over the powder a sufficiency of boiling water. Infuse for a few hours then boil down to half the original

quantity, strain while hot, and concentrate to a due consistence over water bath.

Dose.—Of Extract. Berber. (as a febrifuge) ʒ ss. ; thrice daily diffused in water.

Ointments and Cerates.

The articles necessary for the preparation of many of the ointments of the English Pharmacopœia, are common enough in India. In making ointments and cerates it is in general necessary to employ heat, but it must be very gentle, for a high temperature is liable to generate in them acrid properties, that may quite alter their nature. The vapour bath is the best means of applying heat, and, both while the ingredients are being melted and mixed, and while the preparation is cooling, brisk agitation must be maintained.

Boswellia Thurifera.

N. O. Amyridaceæ.
L. S. Decandria monogynia.

Salai.....*Beng.*
Luban.....*Hind.*

Tree ; leaves deciduous, unequally pinnated, leaflets oblong, obtuse serrated, pubescent ; racemes axillary, single, shorter than the leaves.—*Wt.* and *A.'s Prod. Vol.* i, 174.

This tree yields the gum-resin called Olibanum ; Paringhi sambrani, *Tam.* ; Gunda barosa, Avul cundur, *Duk.* ; Kundir zuchir, *Hind.* It is the frankincense of the ancients, and the Λιβανος of Dioscorides. It occurs in large pinkish semi-transparent tears, and in irregular, opaque, yellowish masses. It is soft and ductile, but breaks very easily if sharply bent. It has an agreeable balsamic odour, and a bitterish balsamic taste. It burns with a clear steady flame, diffusing a pleasant fragrance, giving off dense black smoke and leaving a black ash. When chewed it partially dissolves, rendering the saliva white and emulsive. According to O'Shaughnessy it consists of 28 parts volatile oil, 37 resin, 4 gum and eleven of gluten per 100. It is thought to form the chief ingredient in the once famous nostrum, *Wroughton's Ointment*. It forms an admirable substitute for resin in the Ceratum Resinæ of the London College. Indeed I am inclined to think, that the Indian ointment will be found the more efficient of the two.

Ceratum Resinæ.—Take of Olibanum and wax each lb. i.; of earth-nut or gingilie oil ℥ xvi.; melt the resin and wax together, then add the oil, strain through a cloth and stir briskly until cold. With this preparation as a basis, the following ointments may be made according to the formulæ of the British Colleges.

Unguentum Æruginis.—The native names of Verdigris are Vungalap-patchei, *Tam.;* Zungar. *Pers.;* Pitrai, *Hind.*

Unguentum Cantharidis.—Substitute the Mylabris cichorii powder for the Cantharides.

We have now to notice some other ointments, that may always be prepared in India from indigenous materials, according to the formulæ of the English Pharmacopœias.

Unguentum Camphoræ.—Take of prepared lard (Poonnie colupoo, *Tam.;* Soor ke churbee, *Hind.*) ʒ i.; camphor reduced to fine powder ʒ ss.; mix intimately. Useful in chronic cutaneous diseases, attended with much itching. (Neligan).

Unguentum Ceræ Flavæ.—The native names of wax are Mellugoo, *Tam.;* Moam, *Pers.*

Unguentum Cocculi.—The native names of the Cocculus will be found in the article Stimulants.

Unguentum Gallæ Comp.—Substitute the Huldah or Kadukai, for Galls.

Unguentum Piperis Nigri.—The native names of black pepper will be found in the article Stimulants.

Unguentum Sulphuris.—The native names of sulphur will be found in the article Cathartics.

Plasters.

The same mode of preparation is to be adopted, and the same precautions observed in making plasters, as in making Ointments and cerates.

Vateria Indica.

N. O. Dipteraceæ.

L. S. Polyandria monogynia.

Dupada-maram, Kundricum.....*Tam.*

Large tree; panicles terminal, flowers white; calyx segments oblong, obtuse, not enlarged when in fruit; petals

oval, emarginate, scarcely longer than the calyx; stamens 40—50, anther cells linear; connectivum produced beyond them into a subulate point, splitting along with the anthers; style elongated; stigma acute.—*W. and A.'s Prod. Vol.* i, 83.

This tree is found in Mysore, Malabar, &c., and yields the piney resin* or dammer of the western parts of the Peninsula. It is procured by simply cutting notches in the tree, from which the resin flows; or by notching and then killing the tree by fire placed around the base of its trunk, after which, in from 1 to 2 years, nearly the whole of the dammer exudes. As it comes from the tree it is quite fluid, pellucid, fragrant, acrid and bitter. In this state it makes a good varnish, but by exposure to the air it soon hardens into lumps. It is found of various qualities, chiefly attributable to the age of the tree and mode of collection. It occurs in irregular masses, and is of various shades of colour, from pale green to deep yellow. It is transparent and hard, and has a shining vitreous fracture. It burns with a clear steady light, giving off a pleasant smell and but very little smoke. With the aid of Camphor and heat, it is soluble in spirit. Melted and mixed while hot with boiling drying oil, it forms a good varnish for furniture, &c. Like Olibanum, it combines under the influence of gentle heat, with wax and oil to form a very beautiful and excellent resinous ointment. It forms an admirable substitute in plasters, for Resina of the Lond. Pharm.

SHOREA ROBUSTA.

N. O. Dipteraceæ.
L. S. Polyandria monogynia.

Guggulu, Guggilam, Sala.....*Tel.*
Sal.....*Hind.*

Tree 100—150 feet; calyx 5-sepalled, afterwards enlarging into long wings; petals 5, twisted in the bud, rather silky outside; leaves cordate oblong, entire, on short petioles; calyx pubescent, as well as the branches of the panicles: panicles terminal and axillary: ovary 3-celled; cells 2-seeded; seeds single; flowers yellow.—*Drury's Us. Pl.* 575.

* It would appear that this substance is frequently sold in England under the name of Gum anime, notwithstanding the affirmation of some recent authorities, that the anime of the English market is the produce of a species of Hymenœa.

There are extensive tracts of this tree at the foot of the Himalayas, and in Goomsoor and Cuttack districts. It yields the resin or dammer* of the Eastern Coast called, Dhoona, *Hind.*, Coongkilium, *Tam.*, and Guggilam, *Tel.* The dammer is procured by making notches in the barks from which the resinous juice exudes and soon hardens. The Guggilam varies in colour from pale yellow to dark brown. It is devoid of taste or smell, is friable, easily fusible, partially soluble in alcohol, and completely so in turpentine and the fixed oils. In the Bengal dockyards it is used as a substitute for pitch. Like the Vateria dammer, it forms an excellent substitute for Resina in plasters.

Emplastrum Resinæ.—Take of either of the above dammers, in powder, lb ss.; lead plaster lbs. iii; melt the lead plaster with a gentle heat, then add the dammer and mix.

Emplastrum Ceræ.—Take of wax and suet of each lb. iii.; dammer lb. i.; melt them together, strain and stir briskly until the mixture concretes on cooling.

Emplastrum Cantharidis.—Use the above wax-plaster for that of the London College, and the Mylabris cichorii for Cantharis.

Canarium Strictum.

N. O. Amyridaceæ.
L. S. Polygamia dicœcia.

Tree; young parts densely clothed with rusty coloured pubescence; stipules subulate: leaves unequally pinnated, leaflets 9—15, stalked, ovate or ovate lanceolate, acuminated at length serrulate—ciliate, hairy.—*W. and A.'s Prod. Vol.* i, 175.

This tree is common in the Travancore country, and yields the black dammer of commerce called *Carpoo coonghilum, Tam.* It occurs in stalactitic masses of a bright shining black colour when viewed at a distance, but translucent and of a deep reddish brown colour when held between the eye and the light. It is homogeneous, has a vitreous fracture, is partially soluble in boiling alcohol, and completely so in oil of turpentine. It has in burning a more resinous smell and denser smoke, than the other dam-

* S. Tumbugaia, pretty common on the Western Coast, also yields an exactly similar dammer.

mers. It may be used as a substitute for the Pix abietina. Lond.

EMPLASTRUM PICIS.—Take of black dammer, lbs. ii.; olibanum lb. i.; piney resin and bees' wax of each ℥ iv.; roussa oil (Andropogon Martini, see Epispastics.) ℥ i.; ground-nut or gingelie oil and water, of each ℥ ii.; add first the olibanum, then the roussa oil, the ground-nut oil, and the water, to the black dammer, piney resin and wax melted together. Lastly, mix the whole, and boil down to a proper consistence.

EMPLASTRUM CALEFACIENS.—Take of plaster of Mylabris cichorii lb. ss.; black dammer lb. vss.; melt them together by means of a steam or water-bath, and withdrawing the heat stir constantly until the mixture stiffens.

EMPLASTRUM OPII.—Take of powder of opium, ʒ ss.; black dammer ʒ iii.; litharge plaster, lb. i.; water, ʒ viii. To the plaster melted add the black dammer, and when mixed put in the opium and the water, and boil the mixture with a slow fire to a proper consistence.

We shall now notice some other plasters of the British Pharmacopœias, the articles for the preparation of which may be always found in Indian bazaars.

EMPLASTRUM PLUMBI.—Take of oxide of lead (for native names see Astringents,) lb. vi.; ground-nut or gingelie oil, Cong. i.; water, O ii. The litharge must be in very fine powder. Mix them at a high temperature and boil, constantly stirring until the litharge and oil unite to form a plaster. It will be necessary to add a little boiling water, if that which was employed in the beginning be consumed before the end of the process. As soon as the proper consistence and colour are obtained remove at once from the fire, otherwise the plaster will get dark in colour and impaired in quality. A very large vessel is required for its preparation as it foams up in boiling.

EMPLASTRUM ASSAFŒTIDÆ.—Take of litharge plaster, as above, and assafœtida, of each ʒ ii.; galbanum and bees' wax, of each ʒ i. The native names of the assafœtida, and galbanum will be found in the article Antispasmodic. Liquefy the gum-resins together and strain them, then add the plaster and wax, also in a fluid state, and mix them all thoroughly.

Emplastrum Saponis.—Take of soap (Saboon, *Hind.*;) sliced lb. ss. (the English can in general be procured); lead plaster, as above, lb. iii. Mix the soap with the melted plaster; then boil to a proper consistence.

Emplastrum Galbani.—Take of lead plaster, as above, lb. ii.; galbanum, lb. ss.; wax sliced, ʒ iv.; to the galbanum melted by heat, add the lead plaster and the wax; then melt the whole together by a gentle heat.

Art. XI.—*Note on the Ptychotis Ajowan.* By J. J. Wood, Assistant to the Professor of Botany and Materia Medica. Medical College, Madras.

N. O. Umbelliferæ.

Ptychotis Ajowan..... .....*De Cand.*
Ligusticum Ajowan. Fleming.....*Roxb. Fl. Ind.*
Athamanta Adjowan.....*Wall.*
Womum.....*Tam. and Tel.*
Ajoowan..... .....*Duk. and Hind.*

I wish here to introduce to *more general notice*, a medicine which has not only been used by the natives of the country from time immemorial, but for many years back, by almost all classes of society, European and Eurasian.

It is noticed by several writers on Botany and Therapeutics, and, by some, spoken of in very high terms.

If the reader will take the trouble of turning to the article "*Bishopsweed*" in Ainslie's Materia Indica, he will there find the Womum or Ajowan, which is an Indian plant, confounded with the *Sison Ammi* of Linnæus, a native of Europe, and which error our author was led into by Dr. Rottler. They not only belong to the same N. O. Umbelliferæ, and resemble one another very much, but agree very closely also in their medicinal properties.

For further information on this subject, I beg to refer the reader to the Genera *Ammi, Ptychotis* and *Sison* in Gray's Supplement to the Pharmacopœia; and to the articles *Adjmode, Adjwain* and *Adjwain Khorasance* in the Taleef Shereef: also to the works of Roxburgh, Wight, O'Shaughnessy and Lindley.

By the natives of India, the Omum or Ajowan is constantly used in all sudden derangements of the primæ viæ, such as vomiting, diarrhœa, colic, flatulence, &c. ; in the premonitory diarrhœa of cholera ; and often in the unmistakeable cholera itself ; and testimony is not wanting to shew that it *is sometimes*, at least *as useful* a medicine in the earlier stages of the last mentioned disease as many other more costly ones.

A distilled water, under the names of "*Sison Cordial*" and "*Omum water*," has been sold at many of the dispensaries and shops about the country for some time back ; and another preparation called "*Sugar of Omum*" is to be had at Madras of Gay and Co., the successors of a Mr. Gay, formerly an Apothecary in our service ; and who appears to have been the first manufacturer in this Presidency of both the preparations above named.

There is not, probably, in the city of Madras and its suburbs, a single Eurasian family, who, if they have not some of the omum water at home, (and numbers have) have not used it at some time or other, or, at least, heard of its virtues. And it is not in Madras alone that it is so extensively used by the middle classes of society, but in many of the larger cantonments up-country, it is pretty well known. Further, with very few exceptions indeed, the so-called "seed"* of the omum is to be found among the domestic medicines of both Mahomedan and Hindoo families, and is looked upon as the sine qua non of remedies in *many*† affections.

I have good reason, indeed, to remember the effects of the omum, for, on one occasion, when a boy, I was attacked at midnight with a severe fit of colic, (the only severe one I recollect to have ever suffered from,) brought on by indulging in fruit. No medical aid was at hand, and the only remedy given me was the omum seed, which I was directed to chew, and wash down with water, which was not only followed by speedy but complete relief.

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* The fruits (botanically speaking, the Cremocarps or Diachænia) of all the Umbelliferæ are, it is well known, universally called "seeds."

† Some of these have already been mentioned. We learn from their books that they consider it useful also in some of the kinds—or stages—of fever ; in mucous dysentery ; in debility, in catarrh, and some kinds of cough : probably the cough arising from elongation of the uvula, in which case they also order draughts of milk and powdered pepper, or simply apply the latter locally. It is given, almost as a rule, to women after accouchement, apparently with more intentions than one.

This—the crude seed*—is one of the forms of administration by the natives: the other is, in decoction with sundry other aromatics, namely, ginger, sweet-flag, galanga, &c.; but it is evident that this is not a good form, as the volatile oil of the omum would be at once dissipated by the heat.

The European and Eurasian community generally purchase the distilled water from the dispensaries and shops, and use it, mixed with spirits or not, according to the urgency of the case.

I have never seen the "Sugar of Omum" used, nor have I seen the preparation; but have been informed that it has the appearance of "candy," and is prepared in some particular† way with sugar and the oil of omum.

This preparation is, probably, a little more expensive, but much more efficacious and agreeable, than the water. It is also more portable.

I wonder that some of our druggists at Madras do not manafacture lozenges of the volatile oil, as I am certain there would be more demand for them than there is for those of ginger, peppermint, &c.

It must be admitted that we have a good many medicines arranged under the heads of Stomachics, Carminatives, Aromatic Stimulants, &c.; but from the experience I have had, I cannot help concluding (and others will bear me out) that, in the generality of cases, the omum is superior to them all.

I would here enumerate the various cases in which it is constantly and often satisfactorily prescribed, both by medical men and the more intelligent heads of families.

In some forms of dyspepsia, in the vomiting, griping or diarrhœa from errors in diet, in simple flatulence and even tympanites, in faintness and exhaustion, in choleraic diarrhœa, in certain cases of colic and in hysteria, it has been found, even when given *alone*, pre-eminently useful.

From all that is known of this medicine, it appears to combine the stimulant quality of Capsicum or Mustard, the bitter property of Kreata and the anti-spasmodic virtues of Assafœtida. The reader will recollect that both the Assafœtida and the Omum are derived from the same natural

* The ordinary dose of the seed is about as much as would fill a dessert spoon, taken with a little salt.

† The method of its preparation I have not been able to ascertain.

order. But so far is the Omum from being disagreeable, like Assafætida, that we find two or three writers agreeing in terming it "the most grateful," at the same time that it is "the most useful of the Umbelliferæ."

The distilled water would be an excellent vehicle for many medicines,—in the case of purgatives a good corrective; and a powerful adjuvant to stimulants or anti-spasmodics. It is one of the best aromatic waters with which we could both *dilute*, and *assist* the action of, the ordinary liquid medicines given in suspicious derangements of the stomach and bowels during the prevalence of cholera; while the volatile oil would be no trifling addition to the well-known Cholera Pills of Dr. Paterson, or those ordered by the late Medical Board.

While at Vizagapatam some few years ago, I remember to have seen, during a pretty sharp outbreak of Cholera, the richer classes of the people purchasing the Omum water and distributing it wherever required.

I trust I shall not be misunderstood. While I fully believe the omum to be a powerful stimulant, I am not vaunting it as a *specific* in cholera or any other disease: I merely wish to shew the confidence the masses place in the virtues of a medicine, which, it is surprizing, has not yet been introduced into our *Hospital* practice.

On account of its biting or pungent, yet pleasant taste, and the sensation of warmth it creates in the stomach, it has been constantly recommended of late years to those afflicted with the desire for alcoholic drinks. It does not, of course, intoxicate, but it is no mean substitute for the ordinary stimulant in removing almost immediately the sensation of "gnawing"—or "sinking at the pit of the stomach," which the frequent use of spirits so invariably brings on. And I have been assured that it has been the means of rescuing many, otherwise sensible, useful men, from slavery to the habit of spirit-drinking.

If the Omum is ever introduced into *Hospital* practice, the best—the most generally useful—preparation would be the volatile oil, which could be supplied in small phials from the stores; and the "Essence" or "Spirit" and "Water" could be extemporaneously made when required, as is now done in the case of peppermint, anise, &c.

Both the water and the oil are, as is well known, obtain-

ed by the same process and at the same time : and if ever manufactured by the orders of Government at the Medical Stores, the oil could be sent to Regiments and other bodies of men liable to be moved about, as it would be both portable and handy on the march, in the field or on board-ship ; while the *water* (which need not be thrown away) could be served out to Garrison or Station hospitals.

The seed is cheap* ; can be bought at almost any bazaar ; and almost any kind of still will answer. The apparatus in general use for this purpose is one made of tinned sheet-iron.

Mr. Apothecary H. H. Lynsdale, now at the Medical Stores, and who, to my knowledge, has often manufactured the water and, of course, the oil too, gives me the following directions as to *quantity.*

" To one viss (or 3 lb.) of the bruised seed, add six bottles of water, and distil over four. In the necks of these bottles will be found the oil, amounting to about ℥ ss."

We are advised to be careful that the seeds do not touch the bottom of the boiler, as they will necessarily become charred, and the results of distillation will have an empyreumatic flavour. To avoid this, the seed should be tied up in a bag or cloth of *loose* texture, and suspended in the centre of the water.

The Bengal Pharmacopœia directs two gallons of water to one of the Ajwan distilling over one gallon. In these proportions, of course, little or no oil can be expected.

Art. XII.—*Notes of Cases that have occurred in the Tellicherry Dispensary from January 1st to June 30th 1862.* By M. C. Furnell, Zilla Surgeon of Tellicherry.

There have been 999 out-patients and 57† in-patients treated at this Dispensary during the six months ending June 30—a few of which cases may be worthy of notice, the great mass as usual offering no points of interest.

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* The seed of the omum is cheaper even than anise : in Madras, the price of the former is *one* anna a pound, the anise *two* annas.

† The small number of in-patients is owing to the poverty of the institution ; it receives no allowance from Government for feeding paupers and the contributions have lately, from unavoidable causes, much diminished, so that a very limited number only of in-patients can be admitted.

Midwifery.—It is not often the European Medical officer is called upon to afford assistance to native women in childbirth. For this there are many reasons, the most influential of which no doubt is caste prejudice. Yet that a large number of women annually are lost in labour, even the occasional glimpse one catches of Midwifery as practised by the native midwives, leaves no manner of doubt.

I believe, from what I have seen and been able to glean from enquiry, that the most common assistance tendered to a poor woman at all longer in labour than seems good to her attendants, is powerful kneading of the abdomen, followed, if that fail, by one or more women sitting on it, and, if that, too, be unavailing, by a woman falling with her whole weight on that part of the patient's body.

All this is carried on in a room rendered as hot as possible by means of fires, and there is no escape for the smoke save by the door, generally blocked up by as many neighbours as can look in—for on these occasions all the men, women, and children of the neighbourhood assemble to look on and see the "Tamasha." The question that occurs to one is—does ever even one poor woman recover to justify these people in having recourse to such treatment on another occasion?

During the short time I was in charge of the station of Rajahmundry, I saw two cases which first led me to make enquiries, the result of which caused me to arrive at the conclusions I have stated above.

One was the case of a poor deformed Brahminee girl, brought into the dispensary and reported to have been in labour some five days.

She died very shortly after her admittance and before I could see her alive.

As her friends had deserted, I was enabled to make a *post mortem* examination, and discovered a rupture extending across the anterior portion of the cervix uteri and the child lying in the abdomen—it was far gone in decomposition and the ruptured edges of the uterus were dark, soft and pulpy. The intestines were glued together with numberless bands of lymph, but what struck my attention particularly was the head of the child, the bones were broken,

the scalp being a shapeless bag containing sharp fragments.*

I asked myself at the time, could labour pains—excessive as must have been the almost frantic efforts of nature, for several days, to drive a full grown child through such a narrow outlet—have been sufficient to reduce the head to such a state? and I was quite unable to answer the question satisfactorily.

A few days afterwards I was asked to go and see a woman in labour at her own house, who, the people reported, was too sick to bear transporting to the Hospital,—I went, of course.

The house was full of people and smoke, and lying on a cot was a well made young woman in labour of her first child. She was pulseless—teeth set firmly and a sighing tremulous breathing was the only evidence of life—her abdomen was enormously distended and much bruised.

I first tried to restore life a little by pouring some brandy and water down her throat, the attempt brought on a severe tetanic spasm, even to opisthotonos, which lasted about a minute.

On examination I found a head presenting at the os externum, the bones of which were likewise loose and detached one from another. The forceps easily extracted a full-grown dead child. I then brought away the placenta, a small quantity of blood not more than usual followed, but not the slightest contraction of the uterus. Whilst I had my hand in the uterus and was pressing the abdomen externally to induce contraction, the woman sighed once or twice and died.

It was on this occasion I made enquiries through a very intelligent dresser, of the plan of treatment adopted among natives of that place.

Now in the case just cited, there seemed nothing, save the treatment suggested, to account for the state to which this unfortunate woman had been reduced. A well made

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* I made a preparation of this woman's pelvis which is now I believe in the Museum of Anatomy in Madras, its measurements in the *dried* state were

Antero-posterior	2 [illegible] inches.
Transverse	3 4-8 inches.
Oblique	3 3-8 ———

Delivery of a full grown fœtus from a pelvis of these dimensions, would, I presume, have been impossible without some operative proceeding.

young woman—ample pelvis—child just at the gates of life, and yet the woman's abdomen bruised and head of fœtus reduced to a mis-shappen mass. I regretted very much afterwards I had not made a more minute internal examination of the uterus to see if it had been lacerated, but it may well be imagined I was only too glad, when all assistance was unavailing, to retire from a room about 6 feet square full of smoke and odorous women, and that too in the middle of the hot weather.

The above two cases occurred at Rajahmundry and are quoted to bear out the conclusions arrived at by me concerning native midwifery practice; the following which occurred here at Tellicherry is another instance of the sort of force used.

Cootathey, the wife of a fisherman, had been in labour two days, when I was asked to go to her house and see her, the friends would not bring her to the Dispensary and wait.

It was the usual scene—all the neighbours present in a large room full of smoke, from two fires of wood in large broken chatties. The patient reclining on the floor supported in the arms of one *sage femme*, whilst another kneaded her abdomen and a third was dragging as hard, as she could, at a head which was born.

The head I found was nearly torn off, remaining attached to the body by a small isthmus of skin, which was divided and the head taken away—on examination the shoulders were found presenting naturally, so I hooked my finger under one thinking to bring the body away easily—not so, the body stirred not; on further examination I found the abdomen of the child enormously distended, around which the uterus was contracting with great force, quite cramping the hand used in examination.

I perforated the child's abdomen, a large quantity of water was discharged and immediately after, the uterus contracting the headless child was expelled with great force a foot or more along the floor. The placenta followed almost immediately, the uterus contracting very firmly, the woman did well, recovering quickly.

March 2. Called to see M ———, a French Creole lady, Franco Indian, aged 19, in labour of her first child. She had been in labour 36 hours, and the midwives in attendance declaring birth impossible the friends sent for a doctor.

There had been no labour pains for some hours before my arrival, although, I was told, several doses of Ergot had been given—she was faint, thirsty, tongue dry, pulse 130, small and quick, and moreover she was peevish and at times slightly delirious.

Proceeding to make an examination, my attention was drawn to her lower extremities, and I never remember to have seen anything like the state of œdema, they were in. A slight frail woman as to her upper extremities, her lower limbs were, as to size, those of an enormous giant, so swollen and infiltrated were they.

The labia were enormously distended and everted, reducing the aperture of the vagina to a very small space indeed, at which however lay the child's head.

As might have been expected, her bowels had not been relieved for a great number of days (most probably weeks) previously, but I concluded, in her then state, there was no time to wait for their action, so having emptied her bladder, I applied the forceps.

It was with some difficulty I could move the child's head, but just as it did move, the uterus acted, expelling the head much more quickly than I at all expected or desired and the consequence was a rent of the perinæum up to and round the anal orifice. The child was born, placenta expelled and uterus contracted, and it was wonderful to see how almost visibly the enormously distended legs began to diminish; and how at the sight of a living child, and deliverance from her troubles, the lady herself rallied.

I was delighted on examination to find the rupture, although it extended up to, did not include the rectum; it was almost useless in the then state of the tissues to do any thing, still 3 sutures were inserted, to keep the parts together—and she was directed to lie as much as possible on her abdomen and to kneel in making water.

As she lived some considerable distance from my house, I was not able to see her again until three days after her confinement, when as I expected all the sutures had given way, the lips of the wound looked callous. She however had perfect command over her rectum, her bowels had acted freely, and the œdema of the lower extremities had entirely disappeared.

I then explained the nature of the accident that had be-

fallen her to her husband and mother, very intelligent people, and proposed an operation.

To this she offered the most strenuous opposition, but luckily, having a good command of French, I was enabled to add my own arguments to those of her friends, and we, after considerable difficulty, overcame her objections.

Having placed the lady under the influence of Chloroform and the pelvis having been brought to the edge of the bed and under a strong light, I scratched the edges of the wound raw with a scalpel and when all bleeding had finished, inserted 3 needles, as for hare-lip, as deeply as I could, *i. e.* taking up as much of each lip of the wound as without too great strain I could, and having carefully approximated the edges, I made them fast with a twisted suture. I also inserted between the needles interrupted sutures.

The legs were tied together with a handkerchief and opium given to keep the bowels quiet, but it was impossible for me to catheterise daily, the distance from my house precluding my daily attendance: she was directed to keep quiet, lie on her abdomen and micturate in that position, moving as little as possible.

The result of the operation was briefly this: one needle—the one nearest the vagina—sloughed out, the portion of the wound nearest the anus healed well, the middle portion gradually filled in with granulations and bands of organised tissue; when last seen the anterior or vaginal portion of the wound was the only unhealed part, it had become much like mucus membrane with a slight thin discharge. To my repeated requests to allow me again to operate on this portion, I was always answered with "a quoi bon monsieur, c'est tres bien," and the last time I saw the lady she was looking very well, and to my question answered, "mais, je me trouve parfaitement bien"—she had no bearing down or difficulty about the excretions.

Of course compared with the admirable operation of Mr. I. B. Brown, the above may be considered somewhat crude; but considering the means and the assistance at our disposal in the Mofussil, I was very satisfied with the result obtained; and I preferred operating at once to waiting until I could get more efficient instruments than those at my command.

June 4th.—Called to see a woman of good caste said to

be in fits. Not a word was said about labour; to the dresser's questions, put by my desire to the uncle who came, the reply was, no! although she was in the family way it was some two or three months to her time. We, the dresser and myself, drove at once to the house, which was that of a wealthy respectable native. We found as usual an enormous gathering of male friends, and in a room and lying on the floor and supported by her aged father was a fine young woman, comatose, with stertorous breathing, and blowing frothy mucus from mouth and nostrils. She was dying, and expired about three minutes after our arrival.

The father said she had not been in labour, and so said the women attending her. I made an examination however and found the os fully dilated, membranes ruptured, and the head in the cavity of the pelvis.

What puzzled me very much was that the poor girl's legs and lower portion of body and clothes were covered with blood; this I found on enquiry was the blood of cocks, several of which had had their heads cut off and their blood sprinkled over her as a cure for fits!!

I make no apology for giving somewhat in extenso these glimpses of native midwifery practice, they naturally lead one to reflect how many hundreds and thousands of women and children must be annually sacrificed, who, no doubt, might be saved if a little attention were turned to the subject by those in authority.

Accidents of a serious nature are not so frequent in India as in Europe, owing, in a great measure, to the absence of machinery and the less enterprising lives led by the people.

Those seen in this coast generally occur amongst toddy drawers and fishermen.

Coryamboo fell from a house thatching; he alighted on a stake which entered his perinæum; he was brought in on the third day; he had a wound communicating with the urethra through his perinæum, just at the base of the scrotum: through this a portion of his urine passed when micturating. The parts around and over the pubis were infiltrated with urine and pus: all these were freely incised and a catheter retained in the bladder. Under nourishment, stimulants and the free use of opium, he gradually recovered, and was discharged cured 28 days after admission.

Canun was admitted March 3rd with a similar accident, viz., a punctured wound of the perinæum of six days' standing, caused by falling from a height of some feet on a bamboo stake which entered the perinæum a little to the left of the raphé. Catheter passed with great difficulty; tissues around wound ash-colored, and fearfully offensive; the whole was freely laid open, giving vent to a quantity of dead tissue. Charcoal poultice applied, and opium gr. i. every three hours. Wine ad libitum (his means allowed him to purchase this for himself) and catheter retained. He became gradually weaker and weaker; abdomen painful and tympanitic, and he expired on the 4th, three days after admission.

Gun-shot wound.—Condon's matchlock burst in his hand, smashing his thumb and injuring the soft parts in the palm. There was less hæmorrhage than one would have expected, his thumb was taken out at the socket and the parts healed well and rapidly.

Compound Dislocation of Ankle.—Congee Magee, a Moplah, was admitted May 11th. He had fallen from a cocoanut tree from some considerable height, he could not exactly say how high. The entire foot was turned inwards; there was a considerable wound over the outer maleolus; the lower end of the fibula was exposed, its entire width and two or three inches in length: and the skin forming the lower lip of the wound was tightly tucked in under the maleolus: the parts were reduced with some difficulty, the wound requiring to be enlarged, it was dressed and put up on a fracture splint. This was a tedious case. A great deal of discharge of pus and synovial fluid took place; intermittent fever arose, and ultimately those button-like granulations so indicative of dead bone, sprung up; however all did well and he was discharged June 26th, that is 37 days after admission, cured.

It is strange how accidents of the same nature run in couples. A few days after this man's admission, Uumbooa, Tier, was admitted. He too had fallen from a high tree on to a sharp stump which ripped up the outer side of his leg for 8½ inches, exposing the tendons of the peronei muscles and causing a good deal of hæmorrhage. This too proved a somewhat tedious case, parts sloughed, he had some fever and at one time slight tetanic symptoms, which were treated by croton oil purge followed by Belladonna in half and one

grain doses. He is now nearly well and will be discharged in a few days.

Fracture of the Skull.—The amount of injury which the brain will bear, before life is destroyed, has never, I think, been more fully exemplified than in the following case. Conjee Kunden, Tier boy, Æt. 15, was admitted on the night of June 14th, with a large lacerated wound on the left side of the head, with depression of skull; considerable hæmorrhage and protusion of brain; the scalp, which was imbedded in the brain, pressed down by the fractured skull, was raised from its position; but on attempting to raise the bone so much hæmorrhage ensued and the boy was so low—pulse not being felt,—that we deemed it advisable to let him alone—in fact he seemed dying.

The account given by his friends who brought him to hospital was, that a large tree which was being cut down had fallen upon him and struck him on the head.

The following morning, June 15th, he was found to have considerably rallied; pulse 88, somewhat hard; breathing stertorous but regular; *no paralysis of arms or legs;* he moans; pulls up the bed clothes and seems to attempt to speak though he cannot do so; his eyes look at one in a very expressive manner; he moans an answer when called by name; the teeth are firmly closed.

I determined to elevate the fractured bone, and to do so opened the wound, which had been closed the previous night, and ultimately enlarged it: found a fracture and depression of the left parietal bone extending from the sagittal across to the coronal suture, and this fractured piece was again fractured, and one portion more depressed than the other. This was raised; however not without considerable difficulty, and a good deal of hæmorrhage, which welled up from the diplöe. During the raising of this fractured portion and even before, when the wound had been simply opened, brain matter oozed out from beneath the scalp in a direction from before, viz., from beneath the frontal bone, and on passing the finger down forward under the scalp it came in contact with a sharp ridge of fractured bone.

The parietal bone having been replaced the wound was continued on over the frontal bone, disclosing to view a frightful state of things: the frontal bone was fractured right across transversely and the upper fragment driven down

upon the brain, the lower portion riding over it, with a rough irregular edge, at one place having a strong rough spicula standing up. I was enabled, using the lower portion as a fulcrum, to raise the upper piece to nearly its place, but not over the protruding ragged spicula, so this was sawn off, and I then became enabled to replace the bone in a very fair position.

The scalp wound was brought together with sutures; and a dossil of wet lint and a light bandage applied. The boy bore the operation much better than could have been expected, he was acutely sensible to the sutures being applied, moaning and kicking about whilst this was being done, and his looks following our motions were most expressive, though the power of speech was denied him; pulse 120: some wine was given him, but this he energetically spat out.

1. P. M.—Pulse 130, small, vol. comp.; respirations 36; is weaker, cannot swallow; a gum elastic catheter passed down pharynx, and some 8 oz. of mutton broth thrown into stomach; this he retained and his vital powers improved perceptibly.

16*th*.—Paralyzed down right side; state otherwise much the same; he was fed four times during the day; he was last seen at 8. P. M., when the following note of his state was made. Pulse 144; moves his right (paralysed) arm somewhat, and has more motion generally than at last visit; he has retained all his food; but has not defœcated or passed urine since morning; he died about 10 P. M., being convulsed a little before death.

Post-mortem 9 hours after death. Under the scalp a good deal of blood and brain matter; the left parietal broken; fracture extending in a radiating manner, almost impossible to describe without a sketch; one radiation however dipping down through the big wing of the splenoid to the base of the skull, where we had raised the parietal into its place. There was a space left vacant: we had noticed this at the time of the operation, but as no piece of bone could be found, it was attributed to a piece of bone lost, as the wound of the scalp was just over this; we now found the piece of bone—which was about the size of a thumb nail-driven down into the left hemisphere of the cerebrum and in company with it, three pieces of bark of tree, each about the size of the bone—the inner table of the parietal was likewise broken and could be picked out by pieces which crumbled under the finger and thumb. The brain was a

discoloured, semifluid pulpy mass, the greater part of which might have been poured out of the skull.

Considering that all the mischief we sometimes can find to account for sudden speedy death by apoplexy is a clot of blood which a shilling might cover—it is wonderful that this boy, with a brain in the state described, should have lived some 60 hours. It is the more wonderful when we think of the force with which the tree must have struck him to fracture his skull in the manner in which this was done.

Operations have not been numerous. One woman's toe was removed for obstinate onychia—all other treatment having failed to cure her. One boy, with toes and a portion of foot smashed from a heavy load going over it, had Hey's operation performed, leaving him a good useful remnant of foot. One case of strangulated inguinal hernia was, after the usual taxis had failed, relieved by being turned upside down, *i. e.*—head downwards. One child had an imperforate anus rectified by operation, fœces having previously passed per vagina. Several innocent tumours have been removed, but the following case is perhaps of interest.

Hæmatocele of one year's duration; excessive pain; extirpation.—Abdoolah was admitted June 14 with an immensely swollen testicle, which was to the feeling dense, hard, and very heavy. It was said to be very painful. The skin was not at all implicated, and the other testicle was easily distinguishable lying alongside and apparently normal; he complained greatly of the pain and weight, and had a worn and anxious appearance.

He gives a very confused history of his malady. The testicle, he says, has been enlarging for the last twelve months; he does not remember to have received a blow on it save 14 years ago, when he struck it in bathing (subsequently he said it had been struck a year ago).

He was ordered a cold lotion to the part and to take Iodide of Potash and Sarsaparilla: afterwards Belladonna was freely applied to ease the pain, and the part was well supported.

He derived however little benefit from treatment: and no very satisfactory evidence of the nature of the swelling having been elicited from punctures (the man complaining

very much of the pain and expressing a great desire to have the part removed) it was resolved to operate.

The swelling when extirpated weighed 22 ounces, and on being opened was found to be a sac, with intensely thick strong fibrous walls, containing about 5 or 6 ounces of a red grumous fluid. The walls of this sac were ¾ of an inch in thickness, being like very strong buff leather; the internal aspect being lined by a shining smooth layer which I took to be the visceral layer of the tunica vaginalis.

Behind, embedded in the wall of the sac, was a soft mass, about the size of a walnut, no doubt the remains of what once was a testicle, converted into a pultaceous scrofulous looking substance of a yellow dirty colour.

The man found immediate relief from the operation, and though still in hospital will be discharged in a few days.

Art. XIII.—*Cases of Poisoning witnessed in Nellore.* By Native Surgeon T. Ruthnum Moodelly.

Case 1. *Arsenic.*—In the month of August 1858, being directed by the Zillah Surgeon to analyse certain substances sent to him by the Tahsildar of a northern taluq for his examination and opinion, I found them to consist of two portions, one of which was composed solely of fat, while the other, a pack, was white arsenic of the bazaars, tarnished yellow externally by the formation of the sulphurets. On the application of the usual re-agents, both the dry and wet tests, as well as Marsh's, gave clear evidence of the suspected substance being arsenious acid. But the reduction test failed, owing to the tube for the purpose being too wide and the black flux employed being an old and impure preparation, and the resulting metallic ring was indistinct and clouded by a copious carbonaceous deposit. However there being sufficient proof of the nature of the substance derived from the other tests, a certificate to that effect was accordingly furnished by the Zillah Surgeon. The arsenic was found in the possession of a chuckler, whose profession it was to poison cattle by making the unfortunate victims swallow the poison enclosed in balls of fat or similar bland vehicles. Nor is their mischief confined to these unfortunate and innocent creatures alone. Horses belonging either to

the residents here or travellers passing through the districts, are very often sacrificed this way, and the Collector in one of his communications to the Government states that this crime is notorious in this province.

Case 2.—On the evening of 5th January, 1861, an express letter was received by the Zillah Surgeon from the Tahsildar of Gudur, reporting the sudden death of a woman under suspicious circumstances at his station on the night of the 3rd of the same month.

The history of the case is, that on the said day about sunset while the deceased was taking her food, the prisoner, who was her neighbour, and who was alleged to have borne a strong ill-will against her, entered her house and voluntarily offered her services in bringing a broth which the deceased had left in her cook-room. On this being served out the unhappy victim partook of but a few mouthfuls of her poisoned food, when she perceived a sensation of burning and numbness in her mouth, throat and stomach, followed by two or three vomitings and purgings. Giddiness, dimness of vision, and an appearance of darkness before the eyes soon came on, with extreme restlessness and was followed by death in three hours.

Unfortunately the rejected matters and evacuations with the remains of food were thrown away, and the vessels, with the floor of the room, were likewise cleaned away; partly I presume from ignorance, but principally to avoid the chances of easy detection, by persons who were accomplices to the criminal. This was the previous history of the case under consideration.

On repairing to the village I found the body of the deceased removed to the burial ground, and detained there in the open air under the shelter of a temporary and insufficient shed. It was in a state of advanced decomposition, whereby the post mortem examination was restricted to the stomach and intestines. But these presented no marks of inflamatory lesion. A portion of the abdominal viscera, with the contents of the stomach, was enclosed in a jar, sealed and carried to Nellore. On the application of chemical tests, for various poisons, to the contents and coats of the stomach separately, and also to the substance of the liver, no trace of poisonous matter could be detected, probably from being all rejected in the vomiting.

Certain medicinal substances found in the possession of the prisoner, and of a quack from whom she was suspected to have derived her poison, were examined on the spot, but they presented nothing of importance that would add to the weight of evidence.

[It is to be remarked here that in medico-legal cases in the Mofussil, some of the village authorities either from ignorance or principally from interested and corrupt motives, do not pay that attention which their duty demands, and which would throw a considerable light upon the mass of evidence before a Judicial tribunal. Medical evidence after a laborious search failed to corroborate the suspicion excited in this case, but to what is the failure in a great many cases attributable? It is not always to the contents, nor the coats of the stomach, nor the substance of any other chylopoietic viscus that we look for the poison: but if the evacuations are concealed or thrown away; the remains of the poison cleaned away or in some illegal manner kept out of sight; and the body of the deceased removed from its relation with the surrounding objects; the most important element of circumstantial evidence is destroyed. If the medical authorities are apprized after a long delay, when an external examination of a corpse is out of question from the high state of decomposition, and if the village officers will thus continue to vitiate the record of evidence, either by omission or commission, it is no wonder that the ends of justice are often defeated.

Discrepancies in the record are the strongholds upon which the council for the defence and the judge found their objections, and the law allowing the benefit of the doubt to the prisoner, the case falls to the ground, whatever may be the strength of the moral conviction. The plea of ignorance cannot be admitted in the case of village authorities, for I know they are, although there are several honorable exceptions, expert to a monstrous degree both in making truthful, and mischievously fabricating fraudulent, statements, and when such can be instanced, ignorance or oversight is no excuse whatever. Unless we strike the evil at its root, there is no end to seeing criminals let loose to grow hardened and encouraged in their horrid deeds; to set painful examples to others; and to multiply the distressing list of crimes and misdemeanors.

Prevention is better than cure, and hence it is absolutely necessary that prosecutions should be strictly conducted, consistently with the rules of justice, with all precision and despatch, care and attention, with of course the all-essential element of undoubted honesty by the lower tribunal, that the case may stand the scrutiny of the upper where it goes for final disposal. It is very easy to produce a disparity in the chain of evidence upon which a case hangs, and when that is done, the prisoner can calculate upon his escape before the Judge.

The institution of Punchayet is a complete failure, for the arbitrators of which it is composed are often men from the dregs of society, selected or rather picked up indiscriminately without the slightest regard as to respectability and power of discretion. These take up their temporary posts very reluctantly, pay no attention to the proceedings at the inquest, and would be glad to get rid of what to them is a great nuisance, by passing any decision they choose. "Never differ" is their motto, and they will all be found on every occasion to subscribe to one and the same opinion. Who is to know that these worthies are not themselves privy to the base and sordid underhand dealings of some Village Moonsiff? But if a medical opinion on the case before them is thought necessary, the depositions are not completed till the doctor arrives and gives a certificate on the results of his *post mortem* examination, and on his retiring the arbitrators change their opinion if they had ever formed one at all, the record is soon wound up so as perfectly to tally with the views of the Medical Officer. A little extortion from both the innocent and the guilty, for which extortion, all illegal processes were already going on on one side, soon gives a finishing stroke to the proceeding. The record then goes to the Court of Sessions to suffer the inevitable fate for which artifice has paved the way. Such is the picture of a Punchayet's Court of Inquest in cases of drowning, murder, &c. I have attended a great number of inquests and my description is by no means exaggerated. On the contrary I am fully convinced that the monstrous evils complained of are but poorly represented, in as much as they interfere with the medical evidence which they sometimes supplant.]

Without enlarging much upon this subject I will proceed at once to the antidotes employed by the village quacks

while attending upon the deceased, and in similar cases. The froth of soapnut is extensively used by them as an errhine and emetic, but it is very disagreeable, irritant and uncertain in its action on the stomach.

Sulphate of copper is occasionally exhibited by rubbing a piece of unknown weight on a cut lime, which latter is then squeezed into the mouth to be swallowed. This is certainly a very improper proceeding; trying a poisonous antidote for a poison. An acquaintance of mine assures me that his sister died from the deleterious effects of this mineral when given for the purpose of an ordinary emetic action.

Cases 3 *and* 4.—In this instance the victims of poison were two in number, a mother and son, and the principal perpetrator of the two murders was no other than the cook of the Civil hospital. Without entering into the details of the case it will be sufficient to say, that at the instigation of his illegal wife, the said cook gave the poor souls through a friend of his, a quantity of rice flour, as was his wont occasionally, but this time charged with ground arsenious acid. The former desired to deprive the deceased of a share of money due to him; and the latter the (friend), to destroy a rival in his amorous connection with the daughter of the first two prisoners. Cakes were made and were partaken of between 8 and 9 P. M. of 30th November last, by the mother and boy, but their attention was at once arrested by a sensation of burning in the fauces, which prevented them from eating more of their food. It would appear that in a little time, symptoms of irritant poisoning showed themselves, and although rumour spread through the whole street, yet no information reached the Police authorities till a little before morning, when the unhappy individuals were stretched in articulo mortis.

Thus apathetic were the neighbours, or rather groundlessly apprehensive of being involved in supposed difficulties by interfering in the matter, assisting the sufferers or by conveying information regarding them to the authorities! Nor is this the only instance of indifference or unwillingness to come forward to throw light on cases of murder and other crimes. There seems to be some morbid dread of doing what is right. But if properly viewed this is not without its cause for explanation. Medical assistance

was quite at hand, and yet it was not availed of. The poor sufferers in their innocence did not much suspect their murderers, and the cook in question, still under the mask of friendship, felt their pulse and body, assured them of the appearance of signs of recovery, and when they, or their friends, expressed a desire of taking them to the Civil dispensary, said that there was no need for it as they were getting well, and that it could be considered in the morning, when, as I said before, they were no more.

While this was transpiring the wife of the cook went into the house of the sufferers, and to assure them of the flour being innocuous, put a bit of cake in her mouth which she cunningly spat out and simulated poisoning. The cook early in the morning ran up to the Hospital, and on his applying to me for an antidote for a poisoned food which his wife happened to eat with some of her neighbours, I prescribed white of eggs, milk, and gum water, and while thinking of seeing her, I was suddenly summoned by the Zillah Surgeon to hasten with him to the spot for a *post mortem* examination. Fortunately, through the Police guard, the dead bodies were kept in situ and the circumstantial evidence was carefully collected.

The bodies bore a ghastly appearance: pale, with the features shrunk, limbs rigid and contorted. The rooms of the two were covered everywhere with mucous stools containing white specks, the evacuations of the woman being tinged with blood. These were covered over with ashes and chaff. There was also a quantity of rice flour scattered everywhere, and this was carefully collected as also the evacuations, strips of cloth and a piece of leather which were all stained with stool-matter and a white powdery substance. On making an internal examination the stomach and intestines were found extensively inflamed, with the mucous membrane thereof softened and highly vascular, containing copious deposits of arsenic in patches of large and small particles, especially in the vicinity of the greater curvature. The pylorus presented the greatest degree of inflammatory redness: and in the case of the male the mucous membrane of the cardiac portion was entirely peeled off, and was, with a large quantity of arsenic in its substance, suspended in the sanguineous contents of the stomach. The fluid in that of the old woman was of an intense blood colour.

In the evening the particles of arsenic were carefully picked out, dried on bibulous paper and were subjected to chemical examination on the following day, and all the tests proved and confirmed the suspicion of poisoning by arsenious acid. While Marsh's process was being conducted, a frightful explosion occurred when the lighted taper was applied to the jet, a portion of the sulphuric acid, diluted however with the water used, with zinc, sputtered on the face of the Zillah Surgeon, while the explosive mixture from the bottle struck and stunned my right ear which remained deaf for a few minutes. This accident occurred although an interval of about ten minutes was allowed for the escape of the atmospheric air in the bottle. The apparatus suffered no damage and the experiment was repeated with more caution, but the jet being too wide the flame was not sufficiently conical nor steady so as to give a deposit of the metal on a porcelain plate. The other reactions were however quite conclusive.

Quantitative analysis was then carried on, by passing an excess of sulphuretted hydrogen, through a solution obtained by boiling the two stomachs with their contents in a little water and nitromuriatic acid, and after a series of other minor processes the tersulphuret was eventually obtained, but with a large quantity of free sulphur derived from the decomposition of HS.

The results of the Zillah Surgeon's analyses were confirmed by the Chemical Examiner, to whom the sulphuret and the vomits of the woman who feigned poisoning, were sent escorted by a picket of the Police. The vomits failed to show any arsenic here, but the Chemical Examiner stated that they contained a large proportion of it. It is probable that poison was clandestinely introduced into the vomits before they were originally collected from the house of the prisoner.

On searching the house of the cook who lives in another part of the village, amongst other medicinal substances a pack of arsenic was found, which also was submitted to analysis with a successful result. The prisoner was acquitted from want of other evidence.

Case 5.—In this number on the Calendar both the deceased and the prisoner were quacks by occupation. About ten miles from Nellur in a village they happened to meet

each other on the morning of the 29th June last, when an angry discussion took place respecting their ability to convert certain metals into white powder of some marvellous property. After the dispute was over when both became friends, the prisoner proposed and gave the deceased who took it greedily, an instantaneous remedy for rheumatism. The lump devoured was stated to be of the size of a large marble, and appears, as far as the sum total of the evidence goes to show, to have been given without any felonious intention but by mistake. Symptoms of very severe gastro-enteric inflammation supervened, and death occurred in six hours. The wife of the individual conveyed information to the Police station in the same village only after her husband's demise, when, strange to say, the village officials took no immediate steps towards enquiring the case: the evacuations were not secured, and, to add to this dilatoriness, the body was despatched in a putrid state to Nellur, which it reached on the night of the third day, having lost a great deal of the contents of the stomach and bowels, by the gas of putrefaction having displaced the same.

On the fourth day, it was with very great difficulty that the corpse could be approached for examination and the abdominal viscera taken out. There was still left an enormous quantity of arsenic which yielded the characteristic reactions. Here again an explosion occurred in performing Marsh's experiment, although a long time was allowed to pass. This is probably from the generation of the hydrogen being too slow to expel the air in the bottle completely. The jet was fired from behind a screen and the horizontal tube alone was broken.

There is one point worthy of remark in this case, viz., the manner in which the majority of native Hakheems keep their medicines unlabelled; and often harmless drugs are kept in contact with the most subtle poisons in one and the same sack. They go by their physical appearance and in apportioning the dose, they guess but do not actually weigh. Hence, even if other things were equal, their medicines often do no good, or they injure the system from the effects of an over dose.

When it is remembered that in European practice with all its superior systems and arrangements, lives are occasionally sacrificed from unintentional errors, how much more

must they be so in the native practice where such abuses exist. I know of the infant son of a sepoy carried away by a dose of opium being accidently given instead of a purgative pill by the mother, who was addicted to the use of that baneful drug. I heard of the death of an individual in another district, from the use of the seeds of a wild cucumber as a purgative. While such cases in English practice are at once published, they are hushed up in the native, and when an English practitioner is held responsible or punishable to a certain extent at least, the native escapes without an enquiry under the cloak of ignorance and "in good faith." Such and other sinister evils in the Medicine, Surgery and Midwifery of the natives will ere long press themselves upon the attention of Government for separate legislation upon the subject.

While being examined as a Medical witness by the Judge in this case during the enquiry at the Sessions, a question was put to me as to the difference between the terms pure and impure arsenic as applied by the native physicians. The difference in their acceptation does not refer to the absence in the one, or the presence in the other, of any adulteration. All powerful native medicines are subjected to a series of boiling in milk, cow-dung, urine, and juices of leaves, &c., and are then said to be purified. The second question was whether any change was produced by such treatment, the reply being that, as poisons, both are efficacious, but that when used in minute medicinal doses the purified preparation is more easily tolerated by the system.

The trial ended with a sentence of six months' imprisonment for the prisoner, who pleaded not guilty, and alleged in defence, that he neither used nor knew what arsenic was. Here we can safely say that, amongst other things that the native quacks first become acquainted with, mercury, arsenic, sulphur, and Nabi play a most important part in Hindoo Materia Medica.

Case 6. *Aconitum Ferox.*—On the morning of the 16th February 1862, the Zillah Surgeon received information from the Town Police Inspector that a gentleman, Mr. W. H. ——, a German, Clerk at Messrs. R. and Co.'s, was seriously ill at the Travellers' Bungalow, but as he was very busy he directed me to proceed to the spot immediately. On seeing the patient, who was under Police guard on a charge of theft,

for which he was arrested and was to have been sent to Rajahmundry, I found him incessantly retching and vomiting, accompanied by profuse perspiration, numbness, a feeling of weight and powerlessness of the inferior extremities. In consequence of this he was unable to walk properly, progressing with an awkward gait and falling down as if the limbs were paralyzed. He complained of a burning sensation from the mouth down to the stomach, increased on drinking cold water. There was no tenderness of the epigastrium nor uneasiness of any sort in the other parts of the abdomen. The skin was very cool, bathed in sweat, pulse natural or rather accelerated from the effort of vomiting. The bowels were stated to have acted on three times since morning, motions scanty and of a darkish colour, and the urine was scanty and high coloured, resembling wine. The action of the bowels was attended by a slight straining which the patient attributed to piles, but not to any uneasiness in the abdomen. The irritability of the stomach was extremely great, without a moment's cessation, the patient's only distress was retching and vomiting, and the cold water that was taken to allay the burning only tended to upset the stomach more and more. The ejected matters were copious and bilious, containing a large quantity of thick mucus, intermixed with particles of food used in the morning, viz., a slice of bread, a hard boiled egg, and some old cheese with some black particles resembling the horny covering of a seed. These symptoms having appeared early in the morning, breakfast was taken under the belief that the supposed biliousness might subside, but, as it speedily grew worse, a dose of Ipecacuanha was sent for from the jail and administered by the Inspector. But no relief having followed and the patient getting low and helpless,information was sent to the Zillah Surgeon. In the meantime an opiate draught to check the vomiting unduly excited by the emetic, as was supposed by the Inspector, came from the Jail Dresser.

This, however, I set aside, and on making a further enquiry a strong suspicion arose in my mind: and the patient then said that in the course of the night he indulged himself in spirits to an excess, that he was out of his senses, and that probably he might have accidentally swallowed some powdered poison which he had in his pocket. Both of us then searched for the paper, which was lying in the bath room, and found it empty with one or two small particles in it and about the place. He next told me that he had more

of the same stuff in his box in the custody of the Police and that he bought it at Cocanada for killing rats, and that lest some body at home might tamper with it he had to keep it with himself. This substance I suspected was a native poison, and my opinion was confirmed by bazaar men who sell such, and by some intelligent native practitioners. Here again I have to notice the dangerous consequences of neglecting to label medicines on the part of the bazaarmen, one of whom, who sells drugs, could not distinguish Nabi from China or Portuguese root, which we know is a most harmless medicine.

Our patient had a certain degree of tremor in the upper extremities as well as the lower, and a tingling sensation was complained of in the tongue with numbness extending to the central third of the lower lip down to the prominence of the chin. Occasionally during the efforts of vomiting and exhaustion, there was a fit of palpitation lasting for a few minutes. Under so many coincident circumstances, I presumed that Nabi was either accidentally or intentionally taken, and I immediately administered large quantities of milk, white of eggs, congee and mucilage; but in vain, the stomach rejecting every thing.

In the meanwhile, the Zillah Surgeon came, and, at my suggestion, ordered to be given to the patient a tumbler of the juice of the young pods of Gossypium herbaceum in two doses, this being stated by natives to be an antidote for Nabi. This had no effect, and a decoction of Tanner's bark was next prescribed by me, but without any change in the symptoms. As the patient was getting exhausted, his spirits were giving room to despair, the pulse intermitting, and as nature must have freed nearly the whole poison by vomiting, effervescing mixture was freely exhibited, with lime juice and oranges for which the patient expressed a great desire, but all without avail. This state continued till 7 P. M. when there was an appearance of a change for the better, the vomiting subsiding a little and the patient falling into a doze at times. All cold drinks were now stopped and warm tea was given, which the patient stomached very well, followed by one grain doses of opium six times in the course of the night. This greatly allayed the irritability of the stomach but produced no sleep. In connection with this it is as well to state here, that the patient was given to opium-eating, of this drug we found a large cake in his box.

On the following morning the patient was able to sit up in bed, the burning left him, but the giddiness with numbness and weakness of the extremities still continued. The vomiting only troubled him two or three times in the 24 hours, and from this time he began to improve gradually and was able to walk for a few minutes with a limping gait, but sound sleep was never enjoyed for several nights, although large doses of opium and morphia was given.

On the 25th it was thought proper to allow the man his accustomed stimulus, and a small wine-glassful of brandy twice a day, produced a magical effect, causing a good and refreshing sleep and removing all nausea. The following powder was also prescribed by the Zillah Surgeon. Bismuthi Trisnit., Sodæ Sesquicarb., āā gr. xlviii., and Rhei: Rad: Cont., 3 ss. To be divided into twelve powders, and one powder to be taken an hour before each meal.

From this date he improved more sensibly, and steadily, and on the 2nd March when he left for Cocanada, his appetite was very strong and he was well in every respect, except a little numbness which still troubled him in the limbs and lip.

Case 7. *Tartar Emetic.*—While, in February last, attending a case of severe cephalalgia accompanied by some febrile disturbance, I left with the patient, who was a female, half a grain of Tartar Emetic which she importuned me to give her, as she felt her stomach loaded with bile, to be taken early in the morning. She, however, changed her mind and took a purgative, which acted freely but weakened her a great deal, so that on my next visit I directed that she is to take exactly half of my first dose of the emetic intending to produce a nauseant action; but happening to spill out a portion of the medicine, she took the remainder in the belief that what she swallowed could not be more than the dose I pointed out. But soon vomiting and purging came on to an excessive degree, followed by coldness of the body and extremities, cold sweats, severe cramps of the voluntary muscles as well as those of respiration, distortion of the trunk in different directions, squinting, failure of the pulse at the wrist, involuntary motions, sinking of the voice, burning in the epigastrium, difficulty of deglutition, with fatal sinking of the vital powers. Fortunately I happened to see her again and immediately administered stimulants and congee, but without

much improvement in her condition. She continued in a state of collapse till an infusion of galls was prepared and given, when the evacuations immediately ceased and the sinking powers of life soon rallied.

This case is an instructive one in as much as it shows how occasionally small doses of medicine, especially Tartar Emetic, Opium, &c., far exceed the effects intended to be produced, and place life in jeopardy. The patient in question has taken but a trifle more than quarter of a grain, and would have been lost had not timely attention was bestowed upon her. A great many persons, especially females, are predisposed by idiosyncrasy to suffer this way, and it is as well that in prescribing for dispensary patients who often pay only one visit, the existence of this individual peculiarity be constantly kept in mind. The female's friends in this case neglected sending for me, and assured me that she generally suffered from similar symptoms, though much less in degree, whenever she uses a purgative from native quacks, but without danger to life.

Case 8. *Datura Stramonium.*—On the night of the 25th June 1860, I was hurriedly sent for by the American Missionaries of the station, to see a woman attached to the Mission who was dangerously taken ill. On arriving at the compound I found her in a state of high delirium, furious, unmanageable, talking in an incoherent manner, and inclining to be abusive in her language. She could not be restrained in one position but was rolling about in the verandah as if she was blind. The head was hot, and if I remember properly, the pupil was contracted and the pulse quick. A dose of emetic was immediately administered (as her husband told me that in the evening she took a quantity of some green leaves in her village, about three miles from Nellur, as a cure for some bowel complaint), under the impression that this could be from strammony, and cold was directed to be applied to the head and the patient removed to a dark room. Some time after in the night vomiting of green matter freely occurred containing a quantity of datura leaves, followed by relief in the symptoms and refreshing sleep. A dose of purgative then completed the cure.

Case 9.—The subject of this case was a Police peon, Casseem Khan by name, who, on his return from Guntur, whither he went escorting the prisoner in case No. 6, met a Fa-

keer who advised him to use a quantity of buttermilk in which some datura leaves were digested, as a remedy for dysentery.

On the 20th April last, anxious to put this to trial, for an attack of dysentery, he soaked a handful of the leaves for 12 hours and drank the buttermilk at 7 A. M. He then went to bed from which he never woke till 11 A. M. He was then found to have become drowsy, incapable of understanding what was going on around, and was immediately brought to the Dispensary, when, according to the statement of the Dresser, he appeared as if under the influence of spirits; with strong fever. The Dresser administered a scruple of Ipecac: with great difficulty, the jaws requiring to be opened forcibly with a stick as they were firmly clenched; but this failing to produce its effects, a grain of Tartar Emetic was then given without any action of the stomach. Finally grains ten of Sulphate of Zinc succeeded in producing free emesis of dark green matter. The patient was dull, stupid and sleepy for two or three days and had aperients, salines, and effervescing mixtures to subdue the remains of fever and excitement. The patient was discharged on the eighth day, promising never more to try the Fakeer's prescription.

Art. XIV.—*Remarks on some Cases of Traumatic Tetanus.*

By John Shortt, M.D., Zillah Surgeon, Chingleput.

Case I.

Permaul Naick, Æt. 55, caste Malabar, trade cart driver. Admitted 14th February 1861, was brought to the Civil Dispensary late last night, from an adjoining village, by his friends, who state that he was thrown from a cart 14 days ago, when he received a wound on the left side of his forehead, and that for the last four days (the 10th from receipt of injury) he has been suffering from pain, and stiffness of the muscles of his face and neck, and permanent closure of the mouth, owing to which it is difficult to understand the patient's account of himself. He is an old man with a powerful constitution, and robust make of body. On examination he is found to have an incised wound about one inch in extent over the left supra-orbital ridge a little to the outer side of the supra-orbital foramen. The lips of the wound

gape, the bone is laid bare, and the outer table of the os-frontis fissured to the extent of the wound. The masseter and temporal muscles are hard and rigid, and those of the neck tense, has no pain in swallowing. The right eye closed from ptosis and the muscles of the face twitch in paroxysms. Pulse natural; skin cool; bowels costive. On admission 5 gr. of Calomel, 5 grs. of Compound Extract of Colocynth, and half a grain of Tartar Emetic, were made into a soft electuary and insinuated between the teeth.

To have now ʒ i. of Compound Jalap powder.

15*th.*—Tetanic symptoms on the increase, great rigidity of the muscles of the face and neck. Countenance has assumed a peculiar expressive smile, and the features are slightly distorted; pulse excited, 110; skin perspiring; teeth firmly set. The purgative powder acted freely on his bowels, stools fœculent and bilious.

To have Tincture Cannabis ʒ ss., with ʒ i. of Mist. Camp. every two hours.

Vespere.—6 P. M. Much the same.

Continue.

16*th.*—Has taken ʒ iiiss. of Tinct. Cannabis since last report; continues much the same; did not sleep, but was quiet.

Continue.

Vespere.—Appears drowsy and intimates that he is easier. Pulse full; skin warm, is evidently under the influence of the Cannabis.

Continue.

17*th.*—Has taken ʒ iiiss. of Tinct. Cannabis; was wakeful and restless during the night. The tetanic symptoms are decidedly better, can open his mouth about ⅛ of an inch wide. Pulse full and regular; pupils slightly dilated; bowels confined.

To have a turpentine enema now.

Continue medicine.

Vespere.—Has had a scanty evacuation, otherwise much the same.

Continue.

18*th.*—Better: opens his mouth ¼ of an inch wide. Has taken ʒ iiiss. of Tinct. Cannabis.

To have Haust. Purgans ʒ iv. now.

Continue Cannabis.

Vespere.—Bowels freely moved.

19*th.*—The same: has taken ʒ iiiss. of Cannabis.

Continue.

20*th.*—Much about the same, does not complain. Has taken ʒ iii. of Tinct. Cannabis.

Continue.

21*st.*—Is able to open his mouth ½ an inch wide. Pulse 84, regular. The wound on his forehead has quite healed under the application of cold water dressings, and the ptosis of right eye is disappearing fast. Has taken ʒ iss. of the Tinct. Cannabis as it was reduced to ♏ xv. for a dose since last report.

22*nd.*—Although the patient states that he is better, he has had spasms of the left side with startings of the muscles of the extremities. Pulse 90, soft; skin cool; bowels confined.

Repeat Calomel and Colocynth Pill at bed time, and the aperient draught early to-morrow morning. Has taken ʒ iss. of Tinct. Cannabis.

23*rd.*—The patient states he is better, but he cannot open his mouth as wide as he did yesterday. He can open it ¼ inch only now. Bowels moved once this morning, expression of countenance not so cheerful. Has taken ʒ iss. of Tinct. Cannabis.

24*th.*—The patient states he is better, but he cannot open his mouth as wide as he did yesterday. He can open it ⅛ inch only now. Bowels moved once this morning; expression of countenance not so cheerful. Has taken ʒ iss. of Tinct. Cannabis. The Tinct. Cannabis to be resumed in ʒ ss. doses every third hour.

25*th.*—Was seized several times yesterday with general spasms, more particularly of his back, so violent as to raise him off his bed some two or three inches. Feels better this morning, can open his mouth as wide as he did before, viz., ½ an inch; pulse natural; skin cool; bowels open. Has taken ʒ ii. of Tinct. Cannabis since last report.

Continue.

26*th.*—Very much better, can open his mouth this morning nearly an inch wide and talks so as to be understood. Has taken ʒ ii. Tinct. Cannabis; had no spasms but some slight jactitation during the night.

Continue medicine.

27*th.*—Improving slowly but the jactitation is rather troublesome. Bowels confined. Has taken 3 ii. of Cannabis.

Rept. Haust. Purgans now.
Continue medicine.

28*th.*—Much the same. The aperient had to be repeated ere it acted on his bowels. Has taken 3 iss. of Tinct. Cannabis.

Continue medicine.

1*st March.*—Opens his mouth quite wide; states that he feels better, but continues restless at night from the jactitation. Has taken 3 ii. of Cannabis.

To have 3 ss. of Tinct. Opii with the last dose of Cannabis to night.

2*nd.*—States that for the first time since his illness he got some natural sleep last night. The jactitation only troubled him when he first laid down; is otherwise well. Has taken 3 ii. of Cannabis with 3 ss. of Tinct. Opii at bed time.

3*rd.*—The same; jactitation continues, but less severe. He has taken 3 ii. of Cannabis.

Continue medicine.

4*th.*—Better, bowels regular. Has taken 3 ii. of Cannabis.
Continue.

5*th.*—Better, has taken ʒ ii. of Cannabis.
Continue.

6*th.*—Jactitation becoming less frequent daily. Has taken 3 ii. of Cannabis.

Continue.

7*th.*—Better, has taken 3 ii. of Cannabis, this to be reduced to 3 i.

13*th.*—The jactitation gradually leaving him. He has been free for the last two days. Functions natural. Has been taking ʒ i. of Tinct. Cannabis daily with 3 ss. of Tinct. Opii at bed time, since last report.

Omit the medicines.
To have Inf. Cherettæ ℥ ii.
Acid Sulph. Dil. 3 ss.
Ft. haust. ter in die.

15*th*.—Is feeling quite well, wishes to return to his village.

Discharged.

Remarks.—This case is of considerable interest, from the fact of the Tinct. Cannabis having been administered uncombined, thus testing the full value of the drug. The only auxiliaries required were aperients, to keep the bowels in order, as there is always a tendency to costiveness in this disease. It is necessary here to state that for nearly 40 hours after the patient's admission, he took no other medicine than the calomel and colocynth pill, and purgative powder. Some of the patient's friends objected to his being treated at the Civil Dispensary, and were anxious to have him removed to his own house; on this plea they refused to give him other medicines than those alluded to, and intended to have removed him on the morning of the 15th instant; but finding the patient worse they reluctantly consented to leave him where he was. The Cannabis treatment was immediately commenced. Trismus had fully set in, so much so that the mouth could not be opened at all. Stiffness and spasms of the muscles of the back of the neck were present; and the peculiar features of the disease so well marked in tetanus, giving to the countenance that expressive smile, and distortion were also seen. Nevertheless there were two important symptoms wanting when the treatment was commenced. These were difficulty in swallowing, and the violent pain often referred to the sternum, which may be considered pathognomonic of the disease. In all probability they would have followed had the treatment been delayed a few hours longer. The Tinct. Cannabis was administered in 3 ss. doses every two hours, in an ounce of camphor mixture. The daily quantities administered were as follows:—

1st	day	Tincture	given.....	ʒ iiiss.
2nd	,,	,,	,, ...	,, iiiss.
3rd	,,	,,	,, ...	,, iiiss.
4th	,,	,,	,, ...	,, iiiss.
5th	,,	,,	,, ...	,, iiiss.
6th	,,	,,	,, ...	,, iii.
7th	,,	,,	,, ...	,, iss.
8th	,,	,,	,, ...	,, iss.
9th	,,	,,	,, ...	,, iss.
10th	,,	,,	,, ...	,, iss.
11th	,,	,,	,, ...	,, ii.

12th day	Tincture	given.....	ʒ ii.
13th	,,	,, ...	,, ii.
14th	,,	,, ...	,, iss.
15th	,,	,, ...	,, ii.
16th	,,	,, ...	,, ii.
17th	,,	,, ...	,, ii.
18th	,,	,, ...	,, ii.
19th	,,	,, ...	,, ii.
20th	,,	,, ...	,, ii.
21st	,,	,, ...	,, ii.
22nd	,,	,, ...	,, i.
23rd	,,	,, ...	,, i.
24th	,,	,, ...	,, i.
25th	,,	,, ...	,, i.
26th	,,	,, ...	,, i.
		Total	ʒ vi. and 3 v.

The largest quantity of the Tinct. Cannabis administered within 24 hours was ʒ iiiss. This quantity was taken continually for six days. The object kept in view was, not only to bring the patient under the influence of the medicine, but, to maintain the same until the nervous irritation which excited the disease had subsided. The wound healed kindly, on the 9th day, with cold water dressings, and the symptoms of tetanic spasm were alleviated. The patient recovered the use of the upper lid of the right eye, which had been palsied, and was doing well in every other way when the dose of the Tincture Cannabis was reduced to ♏ xv. Immediately after, general spasms and startings of the muscles (of the left side in particular) began to shew themselves.

The trismus reappeared, the patient lost his cheerful look, and there was every indication of opisthotonos setting in.

This shews that although the Cannabis had controlled the disease for the time being, the medicine required to be continued for a much longer period to eradicate the tendency to this disease from the system. This was completely effected on the 27th day from the commencement of the treatment. During the whole of this time, the patient continued more or less under the influence of the drug.

The specific effect of the Cannabis was pretty well marked in this case, for on the evening of the 2nd day after the commencement of the medicine; it was evidenced by the ful-

ness of the pulse. Although there was no visible excitement or intoxication, the patient continued semi-cataleptic, his countenance cheerful and happy, appetite unimpaired, and he was all day in a dreamy state, with closed eyes; but at nights he became wakeful and restless, there not being the least tendency to sleep. On the 15th day, an opiate consisting of ♏ xxx. of Tinct. Opii. was administered at bed time, with the happiest effect. The patient at once acknowledged its good effect, as it was the first night's refreshing sleep he had since his illness. It would be an advantage to administer an opiate at bed time in the treatment of the disease with Cannabis, but this should not be done ere the system has been brought under the influence of the drug, or so as to check the tendency to wakefulness. In the present state of our knowledge, the Cannabis appears to be the best and most appropriate remedy to have recourse to in this disease.

An interesting report of a case of tetanus is given in the 3rd No. of this Journal (for January, 1861,) by Dr. G. Smith, in which the disease has been successfully treated with the Tinct. of Aconite. Had I had the medicine perhaps I should have been tempted to try its effect in the present case. This disease is recognized in Southern India under the appellation of "*Junnee*," and is invariably looked upon as a fatal malady, supposed to be the result of cold.

The treatment, of Tetanus, is generally empirical, consisting chiefly of stimulants and heating medicines. In the traumatic variety it is popularly believed that wounds of the hands and feet, more particularly those of the fingers and toes, produce the disease. Other parts of the body, if injured, may also give rise to it, more especially lacerated wounds in general.

I can now call to mind a case in which a boy aged 10, received a blow from a stone in the left side, between the 7th and 8th ribs, the skin had not been broken, nor was there any tumefaction present. The boy was admitted with tetanus on the 12th day after the receipt of the injury, to which he eventually succumbed on the 16th day, the 4th after the setting in of the disease. In another instance injury to the testicle produced the disease, and in a third a little boy from the Civil Orphan Asylum, Madras, was brought into the Monegar Choultry with tetanus in 1853, from the result of a wound situated exactly in the same spot as that in the case detailed above.

The poor little fellow was soon carried away by the disease. However, it is satisfactory to know that, formidable as the disease is, it is amenable to treatment, as there are several cases reported in the Indian Annals of Medical Science, by Drs. Jackson, Mudge, and others, successfully treated with Cannabis. We are indebted to Dr. O'Shaughnessy for having first brought this drug to notice. From the seat of the injury which produced the disease, the cause was no doubt nervous lesion of the frontal nerve, a branch of the ophthalmic division of the 5th cranial nerve. But an interesting physiological question here arises as to the cause of the ptosis of the upper lid of the right eye. Anatomy assists us here as we call to mind that the levator palpebræ is supplied by the 3rd pair or motores oculorum, and the inferior division of this nerve forms the short root of the ophthalmic ganglion, thus connecting the frontal with the motores oculorum; and we also know the pathological fact, that when one side of a nerve is diseased or injured, the opposite portion is paralysed from decussation of the fibres taking place, thus we see an explanation of the ptosis of the right eye. When the nervous lesion was repaired by the healing of the wound, the nerve supplying the levator palpebræ recovered its power and took on its normal action. I trust it may not be considered out of place to briefly advert here to a case of epilepsy from metastasis of rheumatic gout, to the brain; and in which the Cannabis proved of essential service. A weakly, emaciated, sallow-looking gentleman, Æt. 35, who had for years been a martyr to rheumatic gout and had suffered from rheumatism of the heart 10 years ago, was suddenly seized with epilepsy. On the subsidence of the paroxysm there was a tendency to a return of the fit, the next day, from the spasms of the muscles of the face, and starting of the tendons of the extremities. One grain of the Extract of Cannabis, with half a grain of Camphor, was given every two hours with the best effect. The patient had no return of the disease, became cheerful, and his appetite improved considerably. The Cannabis, in this instance, acted as a charm in allaying the spasms. This gentleman died from a different disease, three months after.

The other day, in a case of trismus nascentium occurring in an infant 10 days old, I gave the Cannabis a trial. ʒ ss. of the Tincture with ʒ iss. of Camphor water was made into a mixture, and a tea-spoonful of it given every two hours.

The child had been ill for four days; at first a remission of the symptoms took place, but this was only temporary, for, the tetanic spasms recurring with greater force, the child died some 24 hours after I had first seen it. I fully believe that if this infant had come earlier under treatment it would have recovered. Even had it been the child of a European, the result would have probably been much more satisfactory, for, with natives of caste, with an infant of so tender an age, it is difficult to get them to attend regularly to the administration of the medicine or nourishment.

Art. XV.—*On some Anomalous results of the Administration of Chloroform by Inhalation.* By Howard B. Montgomery, M.D., F.R.C.S.I., &c.

The frequency with which this agent is now employed as a means of assisting capital, and other serious, operations, has resulted, not only in its general use by practising Surgeons, but also, in a general desire for its use, by patients, both European and Native.

Within my own experience I have, as a rule, employed chloroform in all such operations and with generally the happiest effects; and I have not myself seen any single fatal case arising from it. But a knowledge that it has proved fatal in many instances, and in the hands of highly experienced Surgeons, has made it recently a subject of statistical research to analyse, the method of death in such instances, and the percentage which they bear to all the cases in which this agent has been employed for professional purposes at Home.

In order, as far as possible, to encourage the investigation of similar points of research in *this* country, and to place on record cases likely to prove of interest to operating Surgeons, I have collected from occasional notes of practice the following cases in which some anomalous symptoms presented themselves.

I should mention that I have used this drug, more or less, since its first introduction into practice, and that without doubt I have been enabled under its use to perform operations about which, without such an assistant, I would

certainly have hesitated. My usual experience is highly in favor of its almost universal use, but at the same time I would frankly confess that on every occasion I used it, I have been on the watch for dangerous symptoms, and I have not been without witnessing them.

The following cases may illustrate the possible results of the inhalation of chloroform and some effects of an unusual (and to me, inexplicable) kind.

Case I.—In the year 1851 a young boy was admitted into Steevens' Hospital, Dublin, having received a severe injury of the leg necessitating amputation. The lad was put under the influence of chloroform by me and carried into the operating theatre in a state of apparently deep insensibility.

As the operation was proceeding I continued the influence of the chloroform by occasional small doses administered in the usual method.

As the patient had struggled a little at one period of the operation, his hands were held by the assistants; and I was compelled, being anxious to ascertain the condition of his pulse, to place my finger on his carotid artery. Immediately, the boy, who had apparently been quietly asleep, opened his eyes and said in a gentle voice, "Don't put your hand on my throat, there is nothing the matter with it. Do you not see that they are settling my leg." At this time the bone was being divided: and during the subsequent taking up of the arteries he remained quiet with his eyes wide open, but without any symptom of *pain.*

The operation being concluded, the lad was removed to his cot in an adjacent ward and I remained by his side, attending to the use of the proper restoratives, and after a few minutes he was quite conscious. He declared to me that he had felt no pain and had been utterly unaware of everything that had occurred; and yet, during the whole of a lengthened and painful operation he had not felt any single step of it; and, though fully observant of passing events, was entirely ignorant that his leg was being amputated.

In this case clearly consciousness was retained and sensation was completely in abeyance.

But a much more striking case was the following in which the most serious symptoms were present for many

hours and threatened to have a fatal termination. In this, in great part, I transcribe the original notes of the case as recorded in the Journal of *In Cases* in the Honore Dispensary in which it occurred. I, however, intentionally omit all details except those immediately referring to the object of the present paper.

Case II.—12*th January* 1857.

Venkapah, male, aged 4 years, was admitted at 10 A. M. with several serious injuries, resulting from his arm having, on the previous evening, been entangled in a sugar mill.

The boy was weak and faint on admission, and the hand appeared to have a tendency to become gangrenous.

He quickly rallied after a stimulating draught, and was ordered to have a full opiate at bed time as he was suffering great pain.*

13*th*.—Arm removed by single flap, scarcely two ounces of blood lost.

Chloroform was administered and rapidly took effect, and from this he apparently perfectly recovered. The arm was not immediately closed up but covered with damp cloth and left open, so that in case of hæmorrhage the source of it might be readily detected, the boy was then left apparently comfortable, *though not speaking at all.*

Up to this point the case had done well, but very soon afterwards ill symptoms showed themselves. I now quote the original reports. (The operation was probably concluded at about 7½ o'clock A. M.)

"About ten minutes afterwards he became restless and began moving about in bed jerking his limbs up and down and from side to side. Crying out, apparently from pain, and then falling asleep for a few minutes, waking again, being restless, and falling asleep again. The whole of each series of these different stages taking place about every four minutes.

I was not made acquainted with these symptoms until 11 o'clock or three hours after the operation.

I immediately proceeded to see the child and found him as described above, my opinion was that he had congestion of the brain from the effects of chloroform, and that if this was not removed he

* Operation was obliged to be deferred from yesterday in consequence of the wish of his friends who desired the presence of an absent relative.

might die from inflammation. He had, I found, eaten nothing before or since the chloroform was administered.

R. Terebinth ʒ ii.
Aqua Ferventis ʒ iv. M.
Ft. Enema.

Head to be shaved and cold lotion applied, and one leech to be applied to each temple, if convulsions do not cease after enema.

Enema operated well; one large worm passed (the presence of worms had been suspected by me, and hence I preferred the Turpentine Enema, otherwise I should have preferred a less exciting one) the fits however continued unaltered.

One leech applied to each temple.

The condition of the child before giving the enema was just as at present, viz., eyes staring and wild in expression during the convulsion, and *fixedly* closed during sleep. Pulse rather slow, but full and bounding; limbs constantly tossed about; head natural as to heat; heart's and lung's action as in health.

The leeches drew blood well and the bites were fomented with warm water to encourage bleeding. He seems a little more rational, refuses all food and does not reply to questions.

5 o'clock.—Seems somewhat easier. Cold lotion continued to the head without intermission. If he does not soon recover he is to have another leech upon each temple.

Had a motion about quarter of an hour ago, but otherwise no change. Another leech to each temple, applied, and some thin conjee to be given if he can be made to take it.

6 o'clock.—Almost immediately after the application of the leeches he began to improve, the convulsions became much less frequent, and in the interval between them he was wakeful and sensible, recognizing his friends and speaking, *but not intelligibly*. He has now about five or six convulsions in the space of one hour.

8 o'clock P. M.—Is now quite conscious and speaks rationally. One of his first questions was an enquiry as to whether *his arm had been removed or not*—from this I infer that he was not conscious during the whole day, and that the congestion of the brain was set up at *the time* of *the operation*, notwithstanding the apparent recovery from the chloroform (administered 12 hours ago.)

14*th*.—The child took some conjee at 12 o'clock mid-night, and again at 2 A. M.

6 o'clock.—Since 2 o'clock this morning the child has slept a good deal and with much benefit, but always, upon awaking, is *slightly convulsed*, but this passes away very quickly.

℞. To have a dose of oil :—and, Imperial to drink. Cold water dressing on the arm, to be kept wet until 2 o'clock when the limb is to be dressed.

2 o'clock.—Child quite recovered from the tendency to convulsions : is quite well ; arm brought together and found to fit well ; bowels twice moved since morning.

15*th*.—After the arm was dressed yesterday the child fell into a profound sleep, and awoke in three hours much refreshed. The arm is not painful to-day and the child perfectly well.

To have some castor oil in morning."

The subsequent history of the case is unimportant—the child did well and was discharged cured.

The results of chloroform inhalation in this case were singular, and to the best of my knowledge are unique. The amount of chloroform used was small and the recovery from it *apparently perfect ;* yet, there is little doubt, to my mind, that during this time the boy was suffering from a congestion of the brain, the more decided symptoms of which did not come on for some hours afterwards. During the continuance of them, the indifference to pain and the entire unconsciousness and wildness of the child were more allied to that witnessed in mania than to any other condition. In mentioning *indifference to pain*, I allude to the manner in which he flung about the stump, although he gave expression to pain by his cries.

Whatever be regarded as the pathology of this case (of which, fortunately, I had no opportunity of satisfying myself,) I have no reason to regret its result as teaching a lesson which I think should be borne in mind by all, viz., *that apparent recovery from chloroform inhalation does not, of necessity, determine all chance of its injurious action.*

The other cases to which I purpose to refer were examples of a more usual form of affection, but one which overlooked might possibly end fatally.

Case III.—Davee, Æt. 25, female, was admitted into the Honore Dispensary on 1st of October 1856 with fungus hæmatodes on the inner and posterior aspect of the right arm. Excision of the tumour was decided upon and performed on 6th idem ; the usual precautious having been taken to prevent ill effects from chloroform.

The tumour was found to have deeper attachments than were suspected, and its removal was consequently more tedious than I had anticipated.

Toward the close of the operation the face became livid, she breathed sterterously and with great difficulty. Ammonia, the free admission of air, small doses of brandy and ammonia, were had recourse to, and the woman recovered, but she did so very slowly.

In this case the operation was fortunately nearly at a close before the ill effects of chloroform became apparent,—but they did so with extraordinary rapidity. Not half a minute elapsed from the first sypmtoms of these ill effects until the woman appeared at the point of death.

In this case the patient was not removed from the operation table for three hours after the chloroform had been given.

She subsequently did well and was discharged cured.

Case IV.—In the autumn of 1860, I had occasion to operate on a patient suffering from elephantiasis scroti; his heart was *apparently* sound and his general health pretty good. He came under the influence of chloroform (administered at his own request) readily, or to speak more correctly *was coming* under it, when his pulse rapidly failed and he appeared likely to sink; yet neither lividity of the face occurred nor any difficulty of breathing. Restoratives of the usual kind were employed and he recovered satisfactorily.

Operation was of course postponed, and was subsequently performed without the aid of chloroform. I do not dwell upon this case further than to impress upon the reader the importance of great care in the use of chloroform in operations for this disease. For, in the great majority of instances, there is, or appears to be, fatty degeneration of the heart. I have myself operated upon three cases of this kind in which this disease was probably present: but in two of which I administered chloroform—and I have seen three other cases in the practice of my friends Drs. vanSomeren and Paul—and in all of them (with one exception) was the inhalation of chloroform attended with considerable risk. However I am happy to add that no ill effects followed its use. As these cases are to appear in an early Number of this Journal, I need not now do more than allude to them

as bearing upon the practical caution I have above given, and of which I was recently reminded when examining a case upon which I hope to operate in a few days.

As regards the use of chloroform in all cases the conclusions will be apparent; but I may briefly note the points which seem to be proved by the foregoing examples.

1. That loss of consciousness is not essential to loss of sensation.

2. That apparent recovery, at the time, does not prevent the possibility of cerebral disturbance having been set up.

3. That the drug may be continued without ill effects for a long time and yet *suddenly* induce dangerous symptoms.

4. That, in certain diseases, chloroform must be administered with especial care even though the heart may *appear* to be sound.

PART II.

REVIEWS AND NOTICES OF BOOKS.

A Manual of the Diseases of India. By W. J. Moore, Licentiate of the Royal College of Physicians, Ed., &c., &c. H. M.'s Indian Medical Service, Bombay Establishment. London: John Churchill, New Burlington Street, 1861.—Sm. 8vo., pp. 220.

This unpretending brochure is one of that valuable class of books which have of late years issued from the press, embodying the experience of eminent authors whose works, in themselves, are too ponderous and numerous to form component parts of the library of one destined to travel, as most military Medical men do in the earlier years of their career.

We are always glad to see a new manual, for we feel pretty certain of receiving information of a reliable kind. If we meet with no new and startling theories, we have the satisfaction of leisurely refreshing our minds as it were in a garden redolent with the choice gleanings of the forests of many lands.

The Manuals of Wilson, Druitt, Churchill, and others of equal value, have done much to diffuse sound professional knowledge. The numerous works on *special* subjects are, however, often not only expensive, but inconvenient. He is happy who has had time and opportunity to make himself acquainted with such works prior to his joining the army; after this period a library is both difficult to obtain and more difficult to transport; and it is especially difficult to *preserve* in India.

A Manual of the Diseases of India for the junior physician and Medical subordinates has long been a desideratum. The works of Johnson, Twining, Annesley, Geddes, and others who have written on Tropical Diseases, were excellent in their days; but the experience of later years has justified a change in the treatment of diseases recommended by these accomplished authors. Our knowledge of pathology is widely extended, and our system of therapeutics considerably modified. We no longer saturate

the system with preparations of mercury for the treatment of diseases which are rapid destroyers of the vital properties of the fluids of the body; we are loath to rob the European sufferer of blood in this pallor-working climate where leucocythemia is more common than hypercœmia in Europe; and yet disease appears to us to be more amenable to treatment than formerly, if we can place any reliance on statistics.

Sir R. Martin's valuable work, on the Influence of Tropical Climates, is hardly suited to the class of readers to whom Dr. Moore has especially addressed his manual. Morehead's voluminous work is but little suited as a guide to the junior physician,—it is not, certainly, a work for a Medical subordinate, neither is it adapted for "the cabin, the tent, or bullock trunk."

Why we have been so long without a manual of this kind is, perhaps, owing to two things. Such a work would hardly be the fruits of the labours of men eminent in the service and grey with age; nor could we expect it to issue from the pen of a junior who had not enjoyed more than the ordinary advantages of professional experience antecedent to, and during, his Indian career: for, we fear, as a rule, that the Indian Medical service lacks the daily stimulant young men enjoy in England—*apathy*, too often, reigns triumphant in, what are called, "up-country stations." But India is a climate hard to work in,—our *physique* becomes exhausted, and the mind wearied and unequal to the task it often proposes, and to the strain which in other lands would add vigour and brilliance to its efforts.

There are exceptions to this rule, however, and Dr. Moore of the Bombay Army is one. After extensive experience in both medicine and surgery in England, he has added ten years' Indian experience thereto, so that in consulting his "Manual" we may depend on it as a trustworthy guide. He does not offer his book as a substitute for others,—what manual is?—but as a volume of the experience of the best authors on most subjects, condensed, convenient, and of moderate cost.

He divides his work into *two parts:* the first on those all-important subjects—Climatology, general and personal, Hygiène, and Sanitaria. To these subjects he devotes *sixty-one* pages. The second part contains a well arranged resumè of most of the Diseases of India.

On the subject of "*Climatization,*" he says, "here there is no 'seasoning disease,' but the system suffers from the lengthened application of the climate. The individual becomes enervated, his strength exhausted, the blood anæmic; in short, the vis vitæ declines and the cachectic diathesis thus established, renders the constitution an easy prey to the endemic diseases of the country on the least exposure to malarious influence." Daily observation proves this painfully to us. We meet with hale looking men of 20 years' residence in India, and almost fancy the climate has been maligned and that the indiscretion of youth too often sharpened the destroyer's scythe, but ere the sun has awakened the world into another day of life, the hale man is cut down, like the oak by the lightning's blasts, and his mortal remains are hurried to the grave. Life in India is like the flower of the field—the spoiler's hand is for ever upon it, and this will continue to the end, unless we pay more attention to sanitation. No spot on the whole globe requires more stringent sanitary regulations than India. The people, *of themselves*, will never remove the sources of disease and death; in fact, from what we have seen, they rather prefer a stench. We require the hand of the *Law* to be brought to bear: and until there be laws issued, and carried out, on sanitation through the length and breadth of the land, we may cleanse the Augëan stables of cities in vain.

Our author makes a few brief and sensible remarks on blood-letting. We ourselves have seen and practised blood-letting in India with the happiest effects. The old, the weakly, the cachectic, can no more tolerate it in India than elsewhere, but the newly arrived, highly fed, plethoric European suffering from acute disease likely to terminate in fatal suppurative inflammation, will be a proper subject for venæsection. Our experience, in England, in cantonment practice, and in active field-service in India, fully bears out that of the author, who says, "with every desire to husband the strength, and with the knowledge that most diseases bear an asthenic tendency, cases of acute disease will occur, and progress so rapidly in vigorous and sthenic constitutions, that bleeding, by its quick and effectual relief of congestion, is the only path to convalescence."

Routine practice, in this, or the exhibition of mercury, or purgation, is properly condemned by our author. As the

constitutions of his individual patients differ, as the *materies morbi* also differs in seasons, countries and localities, in quantity and quality, and in its effects upon the various constitutions, so does the well-educated practitioner suit his several weapons to the subjugation of the enemy he has to battle with for the life of his patient.

Dr. Moore considers the chief causes of the excessive mortality among the European to lie in:—

1st. "*The improper selection of recruits, and the mode of despatch, and period of arrival in the country.*"

2nd. "*Intemperance.*"

3rd. "*The malarious climate and heat.*"

4th. "*The exposure consequent on a soldier's duty both during war and peace.*"

His remarks upon these subjects are good. They have been copiously written upon by many eminent men; but sad experience has brought forth but tardy fruits of amelioration for these evils.

Cabinets, councils, and secretaries, are usually the select of the wise men—not always—and why the all-important question of lavish waste of life, *ergo of State-money,*—should not have met with the deepest consideration in high places is, to us, nothing less than a marvel. Is it that those at the apex of the social pyramid cannot see, cannot hear, what sadness, disease, misery, and death there have been and still are at its base? We ourselves have seen brave men rendered "unfit for further service" when on their way to fight their country's battles, through the neglect, carelessness, prejudice, and ignorance of some *Incompetent* placed "in a little brief authority."

Dr. Moore relates how in the Persian Gulf men's bodies were thought of less value than the capstan and compass which were carefully protected by night! The awnings would rot with the night dews, but brave men might lie on deck unprotected—*they* of course would not rot, and were of less value than a few yards of canvas.

The subject of "Intemperance in the Soldier" also deserves a passing notice. Spirit in any shape should be no longer issued from the canteens, its sale in bazaars should be strictly prohibited. The probability is that nine-tenths of the men in India drank little else than a pint of ale

once or twice a week prior to enlistment. In this country, especially—save and except on the battle field—spirit is not only not needed, but is the most fertile source of disease and disgrace, and its issue, therefore, is one of the causes of loss of money to the State. We ardently hope to see the Spirit supply at canteens utterly abolished. Beer is the Englishman's beverage, and it is not only all that he requires in India, but it is wholesome if taken in moderation.

With regard to Barracks and Hospitals we only wish that Indian architects had had such a manual as Dr. Moore's by them when they choose sites for standing camps and draw out plans for public buildings. Our barracks and hospitals, as a rule, are not only unsuited to the tropics, but are, also, deficient in most of the essentials imperatively demanded, if we hope to keep men in health.

On the subject of the best mode of marching of troops we come to an issue with our author upon one point. He advises the march to be made after an early dinner, *in the evening*, on the ground that men are less susceptible of malaria. Our experience tells us that it is a terrible thing for a force to move after the sun is down. Before an enemy of any skill it would probably end in defeat—a worse thing than an empty stomach.

We can never forget the sublime confusion we were in on more than one occasion when marching at the hour recommended by our author. Men *will* fall out; camp-followers, baggage animals, and poor sick fellows, always go astray; camp-markers are bewildered; the tents are not up; men are shouting for their comrades; bugles of distress are heard; guns and carts—especially those having the mess-stores—upset in nullahs and bogs; the guides tremble and lose the little sense they have; and, in an absent moment of timidity (the bamboo looming in the rear), they start off *on the right track* at last, and at length the force, in a couple of hours, finds itself where it started from, where the more knowing followers are still quietly smoking their *hubble-bubbles* around the embers of the dying camp fires.

"Fly by night," if necessity obliges, but experience has taught us to advise the early morning march, having revived the inner man with a biscuit and a cup of hot tea or coffee.

In the hot season troops should march about 11½ or 12

o'clock at night; this allows time for a sound sleep after an early dinner, and long ere the next ground is gained, it is daylight and no confusion ensues.

On other points we agree with Dr. Moore.

The subject of "Marine and Hill Sanitaria" occupies *only fifteen* pages. We wish he had devoted more time and research to this part of the work, as we cannot treat on this important topic too carefully: what he has said, however, is pertinent, and worthy of attention.

The subject matter of these *sixty-one* pages is of the highest importance to the physician and the State. We commend our author for the manner in which he has brought it forward, and for the earnest spirit he displays.

With "the *second part* we shall be brief. He gives as an excellent resumè of Fevers, which shows extensive research and good experience; his chapters on *Insolation* and *Hepatic* diseases are very good, but, we think, too short. This Manual would have been better without his "Cerebral Diseases," and "Diseases of the Womb;" these subjects cannot be passed over and disposed of in any *three pages* of letter press.

"Tetanus" is a well-written chapter, and contains a pithy recapitulation of all that has been done in that terrible disease. On the still obscure affections "Beriberi" and "Burning of the Feet," he has made good use of the experiences of those most competent to judge; his experience of *Rheumatism* is that it is a *common* disease in India. Our own experience also tells us that it is a *very common* disease, both among Natives and Europeans, and that it is generally traceable to syphilitic affections, the abuse of mercury, and debauchery.

Dr. Moore places before the reader a valuable digest of the present literature of Diarrhœa and Dysentery. We can recommend the chapter on Cholera. There is nothing new in it, but what is written upon this obscure plague is sound and suggestive.

Hydrophobia is concisely and ably dealt with. He recommends *cold water affusion to the head and neck until spasm is overcome; then alternately chloroform to anæsthesia, and cold affusion at intervals of two or three hours for four or five times.* These remedies he tried at Mount Aboo, and cured his patient. We would certainly recommend a trial of the plan, as it is simple enough, and based upon sound doctrines.

We see he recognizes the existence of Typhoid Fever as an endemic disease of India. Why he did not place it with the other fevers does not appear plain. In a second edition it will probably have its true position assigned to it.

He has discussed "Syphilis and Gonorrhœa" too briefly. The magnitude and importance of these subjects demanded something fuller in a book purporting to supply the places of larger special works. He has hurried through this part of his subject, which we look upon as one of the most important in the diseases of India, too precipitately; this he will doubtless correct hereafter, as he is fully competent to do. We find no fault with what he has said; but it is too curt to be instructive.

We cannot close this small manual without congratulating the author upon the appearance of so desirable a book. We must however candidly admit that is not all that could be wished: we think, however, that it might be made so if some of the present Chapters were omitted, and others expanded to a bulk suitable to the importance of the subjects they discuss.

We wish he had said something on Ophthalmia which is sometimes epidemic, and in some places endemic, and the source of much *invaliding* in the army; a notice also of that essentially Indian disease the "Madura Leg" or "Carter's Fungous Disease of the Foot," would have been a valuable addition to the work. Our author will make his second edition more valuable by amplifying that part of the manual devoted to the diseases of India. We can recommend the book to our readers as a very useful compendium of the diseases of India.

To the newly arrived Assistant Surgeon about to make his first march, and to the subordinate department, the work will prove of great value; to the senior members of the profession it will be found an acceptable remembrancer replete with sound principles and giving ample references to more extended and comprehensive works upon Tropical Medicine.

We shall be glad to see this little work pass into a second Edition in which the treatment of more strictly Tropical diseases, or those developed by this climate, shall appear in further detail than it does at present.

A Digest of the Vital Statistics of the European and Native Armies in India. By JOSEPH EWART, M.D., Bengal Medical Service—London: SMITH ELDER and Co., 8vo., pp. 182.

WE own Dr. Ewart and his publishers many apologies for omitting to notice the work before us in an earlier number of our periodical. The "Vital Statistics" of Indian armies is a subject of peculiar interest to most of the readers of this Journal; at the same time it must be confessed that we have very little of accurate information with regard to it.

Dr. Ewart's book is chiefly a "Digest," as its title implies, of the labours of those who have endeavoured, from time to time, to express in figures the rates of sickness and mortality, in the various branches of the European and Native armies.

The tables thus compiled are interspersed with "the "author's suggestions for the eradication and mitigation of "the preventible and avoidable causes of sickness and "mortality amongst imported and indigenous troops." "The "skeleton of the work," as we learn, "has been chiefly con-"structed from the Bombay, Bengal, and Madras Statistical "Returns, Mr. Edward John Waring's, and Mr. Hugh Mac-"pherson's contributions, Mr. Webb's paper, and Dr. C. "Morehead's great work, on the Diseases of India, and from "other duly acknowledged sources."

We are bound to observe, in the first place, that Dr. Ewart has made the most of the incomplete materials before him, and that he has brought together in a compact form all the easily accessible statistical tables bearing upon sickness and mortality in the Military establishments of the Presidencies of Bengal, Madras, and Bombay. Young statistitians, it is said, are notorious for their eagerness to draw conclusions, and to look upon them in the light of established facts; and we cannot quite acquit Dr. Ewart of having erred somewhat in this direction, but we are certain that he has not given unqualified adherence to any doctrine which the data before him did not appear to warrant. It is the "facts," which in all investigations of this nature are of such doubtful value, and so calculated to deceive the statistical tyro when he timidly ventures his frail bark full of deductions, upon the troubled and uncertain sea of figures, derived from official army returns.

Beyond the bare fact that in India, a given numerical strength of European or Native troops has undergone, year by year, a varying decrement by mortality and invaliding, it seems to us that we have no figured returns which may be regarded as absolutely correct. Take, for example, the rate of mortality which the earlier tabulations show to have resulted from cholera. From 1829 to 1838, of every one hundred admissions of European troops in the Madras Presidency, 27·1 died, or a little more than one in four. The present rate of mortality, the returns show, to be rather more than 50 per cent., or one in two, and this high average seems to be steadily increasing year by year. To what is this difference attributable? Is cholera really more fatal in 1862 than it was in 1818, or is the difference simply one of nomenclature and classification?

Statistics do not determine the reply to this question, and it is not possible, now, to go back and inquire whether in the old returns all cases of diarrhœa, or looseness occurring at the time of cholera epidemics, were entered as cases of cholera, and thus made to swell the percentage of recoveries. Whatever views we may entertain on this point, there can be but little doubt that the tendency of Army surgeons and others of the present day is to err in the opposite direction, and to enter no cases in the register as cholera "spasmodica," or "epidemica," unless the gravest symptoms of the disorder be present.

It is probable that the early registers are unreliable, from want of discrimination on the part of those whose returns of sickness and mortality afforded data for their compilation, and, on the other hand, it is almost certain that in later years, genuine cases of cholera, the severer symptoms undeveloped, have been registered under the head of diarrhœa. To answer the question, has the type of the disease really been assuming a graver form in the last 40 years? it becomes necessary to dispose of the stumbling blocks above adverted to, and which arrest attention on the very threshhold of the enquiry.

Take again our army returns and examine carefully the admissions and deaths from *hepatitis, diarrhœa* and *dysentery*, the connection between the latter disease and hepatic abscess, and see how far they enable us to satisfy ourselves of the value of the ratios of frequency and mortality of any one of those diseases. What was more common, only

a very few years ago, than for every symptom of pain or uneasiness in the right hypochondrium to be registered and treated as hepatitis? The patient might be suffering simply from pleurodynia, from rheumatism of his intercostal muscles, from distended colon, or other simple deviations of health; no matter, he was forthwith leeched, blistered, purged, and mercurialised on the supposition of acute inflammation existing in the substance of the liver, and his case duly recorded amongst the recoveries from hepatitis.

We are so far wiser now, that we know idiopathic inflammation of the liver to be a rare disease, even in India, but the latest returns are scarcely trustworthy evidence as to the relative frequency and mortality of the affection, as compared with the more common suppurative inflammation or degeneration which runs its course insidiously and without any of the usual characteristics of inflammatory action. To all who have given the subject attentive consideration, it must be apparent that the two diseases are essentially different in their origin and progress, yet our classification and nomenclature of disease, even as improved under the auspices of the Statistical Congress of Vienna, do not make any distinction between them.

As regards the classification of *fevers*, whether of the paroxysmal or continued types, the older army returns are most fallacious. Thus "Ephemeral" fever, according to the data collected by Mr. Waring, is fatal in the Madras Presidency in the proportion of 8 to 2,195 admissions, or at the ratio of 0·364 per cent. Now the very meaning of the term Ephemeral, as applied to disease, implies the existence of such slightly disordered action of the economy, as to be a mere passing disturbance unattended by serious or fatal results.

It is evident that these eight fatal cases did not result from such a form of fever. We doubt indeed if a fever to which the term ephemeral is susceptible of application, was ever known to terminate in death. The error is evidently the result of neglect to change the name of the disease as the diagnosis became clear, but it is an error of serious importance, affecting alike the proportion and rates of mortality of all other types of febrile diseases. The "Febris communis continua" of the Army Records, makes no distinction between the simple ephemeral or febricula, and the graver maladies of typhoid or typhus, and to

prove from these records that common continued fevers are more prevalent in one Presidency than in another, though, it may be less fatal in their results, is an object of no practical value. These several diseases all originate in definite causes, and unless the type of fever is specifically diagnosed and entered in the returns, the statistics must be valueless for all practical purposes of prophylaxis, and of accurate classification of disease.

The translator of Professor Radicke's paper "*On the importance and value of Arithmetic means,*" in a recent volume published by the New Sydenham Society, observes with great truth that "Statistics are a most effective instrument "of research when rightly used; but like other edged tools, "in unskilful hands, they are as likely to do hurt as good." The Medical profession, like all other scientific bodies, is now and again called upon to witness the wilful twisting of facts and figures to support preconceived theories, and unsound deductions. Medical men, are perhaps, from the want of steady mathematical training in reference to their professional pursuits, of all others the most liable to be led away, and to pin their faith implicitly, to a view which appears to be based upon a specious array of figures.

A very amusing, but instructive, instance of this occurred not very long ago, at one of the meetings of the Royal Medico-Chirurgical Society, and although the subject has nothing whatever to do with Dr. Ewart's book, we would ask leave to introduce a short account of it in this place, as practical testimony to the truth of the observation just quoted, and of our own views as to the intrinsic value of *past* Army records, in helping to the acquisition of more accurate knowledge of the influences of climate, on types, or classes of diseases.

Dr. Edward Smith, F.R.S., a gentleman well known for his patient and laborious investigations on the influence of "prison dietaries," on "hard labour upon health," and on "cyclical changes" in the human body, read a paper on the 25th of March last before the Medico-Chirurgical Society, which he termed *A Statistical inquiry into the prevalence of numerous conditions, affecting the constitution, in one thousand phthisical persons when in health.* So far as the published abstract of the paper allows of an opinion on its general merits being formed, we may state that it seems to have been a thoroughly honest, and a very painstaking

and laborious analysis of data, furnished in great part by the patients themselves.

Of the "personal conditions" as regards the male sex, and it must be remembered that all the patients were adults, Dr. Smith shows that "11·6 per cent. had com-"mitted sexual abuse : 18·2 per cent. had been addicted to "masturbation, and 22 per cent. had suffered from involun-"tary emissions. 16 per cent. had had syphilis, and 38·5 per "cent. gonorrhœa * * * 48 per cent. had smoked "tobacco."

We will suppose Dr. Smith to have been perfectly correct as regards his figures, but it does not seem to have occurred to that gentleman, to consider whether similar results would not have been brought out on the analysis of the honest histories of a like number of *non*-phthisical males. For instance, is it an unusual thing for healthy young men to suffer at some period of their lives from noctural emissions, and is 22 per cent. a large proportion to be affected in that way. If the reply be in the negative, of what value is the fact in relation to the causes predisposing to phthisis? It is but too true, we fear, that young men do contract either syphilis or gonorrhœa, or both, in a very large proportion of their total number. The prevalence of these disorders, no doubt, is determined by the degree of Medico-police control exercised over loose women, and by the numbers of the latter in proportion to the population, and is *not* necessarily associated with sexual union.

Let the reader think for a moment over all his list of acquaintance, and male patients, and let him put down in "black and white," in parallel columns, those whom he *knows* to have been the subject of some venereal complaint, and those whom he has reason to believe have not been affected, and then decide for himself whether 16 and 48 per cent. of phthisical males having suffered at some period of their lives from syphilis and gonorrhœa respectively, these proportions are above or below the amount of venereal disease in the lists prepared as above. We may draw our own conclusions regarding this matter, especially if our patients, like Dr. Smith's, are taken from the population of a city, in which harlots abound, and where prostitution is without the pale of the law.

We have no hesitation however in giving an opinion that in nine out of every ten lists so prepared, Dr. Smith's

proportions as found to obtain amongst the phthisical would be exceeded.

We have thought it right to consider this point somewhat in detail, because in the debate which followed the reading of the paper, we find it assumed that proof had been given of the tendency of certain conditions to predispose to phthisis. Thus, with reference to sexual abuse, Mr. Acton observed. "It was," he believed, "the first time that profes-"sional observation had been drawn to the question of sexual "abuse in relation to phthisis. There were vague notions "on this subject before, but in this paper *facts had been* "*brought out which would give a firm basis for conclu-*"*sions on the relation of the two.*" The italics are our own. What are the "facts" upon which Mr. Acton concludes that a firm basis has been established as regards the dependence of phthisis, on undue exercise of the generative functions?

All that we can find have been quoted. "11·6 per cent. "had committed sexual abuse; 18·2 per cent. had been "addicted to masturbation, and 22 per cent. had suffered "from involuntary emissions." Now these numbers added together give a total of 51·8 per cent., but Dr. Smith nowhere shows that 51·8 per cent. of phthisical males were injured by sexual excesses. He seems to have put a large number of direct questions to his patients, and to have analysed the replies to these, independently. Thus, to the questions, have you committed sexual abuse? or indulged in secret vice? or been the subject of involuntary seminal emissions? it is not at all improbable that affirmative replies to the whole of the queries would be received from one individual, and so instead of 51·8 per cent. being the proportion of those who had abused their sexual powers, it is more than probable that the 22 per cent. affected with involuntary emissions, represent the whole of the cases in which sexual indulgence could be considered in the light of an exciting or predisposing cause of phthisis.

The "facts," therefore, rest on anything but an unquestionable basis. Indian experience pronounces strongly against the view that there is any relation, as cause and effect, between sexual abuse and phthisis. No men perhaps are such voluptuaries, as wealthy Asiatics—dissolute Mahomedan Princes, Hindoo Rajahs, and their hangers-on. These men pay the usual penalty of early excesses and prodigal waste

of their procreative faculties. They become impotent in the prime of life, or remain childless. We have no hesitation in affirming that the discoverer of an aphrodisiac of undoubted power and efficacy would be in greater request, and find a speedier road to fame, fortune, and influential position in India, than in any other country under the sun! Yet, with this almost universal abuse of the sexual functions, our native Princes, Nawabs and Rajahs do not die of phthisis.*

They die early it is true, but phthisis is no more common amongst them than in the remainder of the population, amongst whom it is, comparatively speaking, a rare disease.

Those who, like Mr. Acton, consider the connection of the two conditions as proved, have another little stumbling block to get over, which, to ordinary thinkers, is somewhat of a "poser." Phthisis is more fatal to females than males. The Registrar General's Returns show the following proportions in England and Wales to a million living of each sex.

Years.	Death from Phthisis to 1,000,000 living of each sex.	
	Males.	Females.
1837	3,771	4,155
1838	3,783	4,077
1839	3,722	4,015

In France, again, the female mortality from phthisis is much heavier than it is in England and Wales. It may therefore be stated as a truth, that in the whole population of a country the proportion of mortality from phthisis will be greater in women than in men. Now to admit that sexual abuse is conducive to phthisis, we must also be prepared to arrive at the legitimate deduction from such a

* The disclosures in the celebrated Mahrajah Libel Case at Bombay, afford a curious insight into the popular notions with regard to sexual indulgence. It was stated in evidence that the Maharajah had defended his gross libertinism, on the plea that unlimited intercourse with women was good for his health! and he is said to have adduced in proof of this view, the example of certain *athletes*, who "trained" for their work, not by temperance and chastity, but in the embraces of their concubines.

premise, viz., that sexual abuse is more frequent and more prejudicial to health in women than in men!

Dr. Walshe, who some years ago examined this question with some care, arrived at the conclusion "*that the procreative power of phthisical males is below the average—the fecundity of phthisical females materially above it;*" and we are unable to see that the more recent investigations of Dr. Edward Smith allow of any contrary view being formed.

Dr. Edward Smith in his Researches as to the predisposing causes of phthisis, tells us that 48 per cent. of his male patients had smoked tobacco. It is due to that gentleman to mention that he drew no inference from the fact. Not so, however, with some of the fellows of the Society who took a part in the discussion on the paper. Dr. Webster, for instance, "regarded it as an important fact that nearly one half of the males were the slaves of tobacco." Mr. Charles Hawkins "did not attach so much importance to smoking in relation to phthisis as Dr. Webster seemed to do."

Perhaps it occurred to Mr. Charles Hawkins as it would to most people not imbued with the anti-tobacco doctrines of a King James, a Dean Close, a Solly or a Webster, that in ordinary life 48 per cent. of smokers, of adult males is not a high average.

It seems to us that we should be quite as much justified in asserting that cholera had its origin in betel chewing, as those who attempt to connect the phthisical tendency of male subjects in an especial degree with tobacco smoking. The argument might be stated somewhat in this way. The whole adult native population of Madras, male and female, chew betel nut. Cholera is a disease never absent from the native population. Cholera is especially fatal to those in the prime of life.—*Ergo,* betel chewing predisposes to attacks of cholera!

When we find educated men—men of standing and note in their profession—so liable to be led astray in their judgment, and drawing false inferences from simple observations, we cannot but think that Professor Radicke's paper on "Arithmetic means" did not appear at all too soon, and that it was high time to endeavour to stem "the stream of "baseless, and, to a great extent, erroneous doctrines which "daily threaten to overwhelm Medical science."

But we have been wandering a long way from the subjects which Dr. Ewart especially discusses, and it is high time to revert to the beaten track, and consider a little more in detail some of the causes which have tended to make the Vital Statistics of Indian armies so unreliable.

We may state briefly that the health of both European and Native troops is materially modified by the following conditions, amongst others of minor importance, and that one great objection to the lumping together the whole of the returns of sickness and mortality of a Presidency is, that the peculiar influences of these conditions are lost sight of. These conditions we would thus classify—(*a*) Climate; (*b*) Locality; (*c*) Accommodation; (*d*) Food, drink, and clothing; and (*e*) Occupation.

It is easy enough to determine that the death-rate of an army (average of a series of years) has been so many per thousand in Bombay, in Madras, or Bengal, and that the ratios of sickness have been so and so during a similar period; but the facts so stated give no explanation of the causes tending to produce the observed differences in the three Presidencies. None of the published statistics, so far as we know, show what the actual influence of the conditions we have specified really is in any one single station or cantonment. Take, for example, the sickness and mortality of European Troops at St. Thomas' Mount and Poonamalee. The returns for these stations always show high averages of mortality, not because the climate is worse than other climates, or that the localities have been badly chosen for housing troops, or that the barrack accommodation, the food, drink, clothing, and occupation, of the soldiers differ in any material degree from what is provided elsewhere; but the excess of sickness and mortality is explainable from the fact that one of these stations contained the Head-quarters of the Madras Artillery, to which recruits and sick men from other stations were constantly sent for final disposal, while the other station was occupied by the Depôt of H. M.'s British Regiments, and received in like manner all recruits and invalids of that branch of the service.

Although this explanation is apparent enough to all who care to investigate the particulars, the figured statements which are published from time to time by authority of Government, do not throw any light upon it. It seems to

us a matter of regret that the elaborate "reports" furnished annually by the late Medical Board, and now by the Principal Inspectors General of the Medical Department in the three Presidencies, should not have been published in detail for public information. It is inferred that many of the great discrepancies we observe in sick and death ratios, given in the official returns, would be capable of simple explanation, if the reports, in extenso, had also been printed. These annual reports, it is understood, epitomize the medical history of each Regiment, European and Native, and allude, whenever practicable, to the causes influencing the sanitary condition of the army. We imagine it is because the reports are made through the Military authorities that they do not see the light, for the Indian Government is always ready enough to print and disseminate information regarding Civil Hospitals, Public Dispensaries, and Vaccination. The army reports, on the other hand, with their accompanying elaborate tabular returns, have simply been forwarded to the Home Government, which treated them after the manner of sealed books, except to the occasional statistitian who obtained permission to peruse them in the record department of the old India House. In this way we conceive much valuable material in elucidation of our vital statistics has been thrown aside and forgotten, and the improvement in accuracy of the data necessary for accurate statistics, much hindered. To show that we do not overrate the importance of a consideration of *all causes* of sickness, we would refer again to the latest published tables of mortality and sickness in the various divisions of the Madras Army. From 1842 to 1859—a period of seventeen years—we see that in the Centre division (St. Thomas' Mount and Poonamalee) the sick to strength, and deaths to strength, were 1,585, and 43 per thousand respectively, while at Bangalore (Mysore division) the ratios were for the same period only 1,387, and 21 per thousand. Without some such explanation as we have given regarding the causes of these differences, we should naturally infer that the conditions of climate, locality, &c., were very bad for the soldier at St. Thomas' Mount and Poonamalee, and very favorable to health and life at Bangalore, but such an inference from the observed differences of sickness and mortality, would not be justifiable, until the amount of mortal disease contracted in other divisions had been eliminated from the Centre division returns. If this, at present unknown quantity,

could be extracted, it would probably be seen that the elevated plateau of Mysore, although very agreeable to the European soldier's constitution and feelings, did not compensate him, as regards the value of life and freedom from serious illness, for the hot, but dry and equable climate of the stations which have the advantage of the sea breezes of the Coromandel Coast.

The inhabitants of the British Isles would seem to be able to bear vicissitudes of climate better than most other nations. The Anglo-Saxon race has done more towards the colonization of new lands, *extra* and *intra* tropical, than any other people under the sun, and the Giver of all-good has, in His wisdom, endowed them with the faculty of living and even enjoying life, under the greatest extremes of temperature.

We find men of our race enjoying rude health in the Arctic Seas, and others again thriving under the burning sun of Central Asia and Africa. *Climate*, that is the conditions of temperature, atmospheric pressure, humidity, rain fall, and all that we comprehend in that term—plays, we believe, a very secondary part as a cause of disease in the true Anglo-Saxon race. It is not an uncommon thing to find that one body of men will enjoy rude health while, at the same time, and exposed to the same climatic influences, another body will be decimated by disease. Many instances of this fact might be adduced, did it require proof or confirmation.

The climate of Burmah is the same now as it was in 1852, or in the old Burmese war of 1824. Yet, for the past four or five years, the death rate in some of the Burmese stations occupied by European troops has been absolutely lower than in ordinary garrison towns of England and Wales, while in the first and second Burmese wars the troops perished by thousands miserably from disease. In 1824 the death rate of Europeans in the army of Ava was about 400 per thousand, per annum. Since 1857 it has been about 15 per thousand.

Then again there is the table land of the Deccan, which at the stations of Jaulnah, Aurungabad, and Poonah, is very favorable to the health of European troops. The climate, of Secunderabad, our largest Military station on that table land, differs in no essential degree from that of the stations just named. The hot, rainy, and cold seasons are the same; there is very little difference in the elevation, rain fall, or

temperature, and yet at Secunderabad until a very recent period, the mortality was more than double or even treble that at the station of Jaulnah! The causes of the malignant dysentery in the old barracks of Secunderabad were not always capable of a satisfactory explanation; but it seems very clear that the percolation of the supply of drinking water used by troops through the soil of a crowded (but of late years abandoned) grave yard, and the drainage of privies, "sodden and saturated with the foul imbibitions of a long period of years," could not but have had a most evil effect upon the health of the men. It is not a little remarkable that since the offensive privies have been destroyed, and the ordure has been removed daily, the men inhabiting the barracks have had a smaller proportion of dysentery cases than the corps enjoying the advantages of better barracks and more elevated sites, in the same cantonment.

Another more remarkable instance of the minor influence of climate in the induction of disease, is afforded in the history of the old Infantry barracks at Secunderabad, and of the Artillery barracks situated within a mile of the former, and consequently exposed to exactly the same climatic conditions.

The troops in the old Infantry barracks for the 20 years ending 1858-59, lost, on a yearly average, at the rate of 48·8 per thousand by disease.

The Madras Artillery, occupying barracks on higher ground, but otherwise exposed to the same influences as the Infantry, in the same period had a death rate of 27·6 per thousand.

It is the fashion with many persons to ascribe much of the sickness, and nearly all the excess of mortality in Europeans in India, to the injudicious use, or abuse, of food and drink. Now with reference to the Artillery, during a portion of this time, we can state from our own experience that the men were neither more temperate nor more careful of their health than the Infantry. If need be, the returns of punishment and defaulters will show that drunkenness is rather more prevalent amongst the various troops and batteries of Artillery than in Infantry corps. It is very certain that the very marked excess of mortality amongst the Infantry occupying the old barracks of Secunderabad cannot be explained, on the supposition that the men led harder lives, or that they were more exposed to the sun, or that

their duties were more prejudicial to health than those of the Artillery men.

It is very evident that there were no such marked differences in the habits and character of the two bodies of men. The difference was simply one of locality. The Artillery barracks on high ground, with good natural drainage all around, —exposed freely to prevailing winds: the Infantry barracks lying low and surrounded by high ground shutting out prevailing winds, close to a swamp, the soil sodden and contaminated by accumulations of human excreta, and the water supply in all probability polluted thereby. In the one case Nature had done much to remove those sources of disease which breed best in defective drainage, filth, and a confined atmosphere; in the other Nature had been powerless, and Man, in his ignorance, had done little or nothing to remedy the evils resulting from an originally badly chosen site!

This seems to us the probable explanation of the very remarkable difference in death rates at Secunderabad, and certainly no more instructive lesson could be read to the Medical profession, on the importance of attending to every minute particular in the selection of sites for the temporary or permanent location of troops, than the melancholy history which belongs to the Infantry barracks at that station.

Nothing again can be plainer than the lesson taught by a comparison of the rates of sickness and mortality amongst the Native troops at this very station. It is not an uncommon thing to find in one Native Regiment, at certain seasons of the year, from 10 to 15 per cent. of strength prostrated by intermittent fevers. Another corps, half a mile or so removed, may have a total of 12 men in hospital out of a strength of 800. These men are exposed to the same influences as regards climate, duty, &c., and yet what a wide difference in the list of ineffectives from sickness! The lines for one Native Infantry corps, which are situated beyond the bazaar on the road to Hyderabad, and on a very low level; are notorious for the pertinacity with which certain diseases cling to them. Should epidemic cholera break out in the city of Hyderabad or bazaar of Chudderghaut, these are the lines in which the first cases appear amongst the troops in garrison; and the cholera mortality in this situation is always excessive. Guinea-worm, low fevers, and bowel complaints, fill the hospital of the

corps occupying these lines pretty constantly, even at times when the other Native troops are healthy.

Now all these differences are due to local causes, rather than to the general conditions of climate and temperature, common to the cantonment.

The climate of Bangalore is perhaps the most agreeable, taking it as a whole, of any place in India. The European soldier retains his strength and energy longer in this place than in any of the low country stations. He enjoys for the most part robust health. But epidemic cholera has, of late years, become alarmingly on the increase, and when it does occur, is not equally distributed amongst the European forces. It seems especially to fix and attach itself to the locality of the King's Dragoon Guards barracks.

This was particularly noticeable during the epidemic of 1860, and again in 1861, and in the beginning of the present year. The Infantry Regiment, whose barracks are only separated from the Dragoons, by a roadway, during the above period suffered scarcely at all from cholera. The exciting causes here must have been exceedingly local and limited, and obviously not dependent upon any general climatic conditions.

In the hot season of 1862 cholera broke out amongst the European troops at Bellary ; but all the cases occurred in the barracks occupied jointly by the 74th Highlanders and D Battery Royal Horse Brigade. A Battery of Artillery occupying new barracks somewhat detached from these, did not have a single case.

In truth the instances in which climate *per se* has contributed to swell the sick lists and mortality bills of European Regiments, are probably much rarer than is generally supposed. It is an indisputable fact that men get sick and die in strange or unusual climates, and that the elements of miasmatic diseases are more rife in some countries and localities than in others; but this merely shows that we are yet a long way from understanding what the causes of disease really are, and that we have made but little progress in counteracting them, when they are understood.

This is particularly true of India as we shall presently endeavour to show. More care has hitherto been employed to preserve health in Arctic than in Tropical zones. An expedition to the Arctic Seas, or an army despatched to Canada

in the depth of winter, are pretty well guarded, so far as forethought and experience can suggest against the rigorous climates of those latitudes. The men have plenty of food and suitable clothing, and are well drilled in the precautions to be adopted against external cold. Consequently we hear of but little sickness resulting from continued exposure to a low temperature. The War Minister or Admiralty Lord, who would dispatch troops or sailors to the far north, with scanty food, and nothing but linen jackets and trowsers to protect their bodies from cold, would very justly incur public censure for mal-administration of their high functions. Yet, until very recently, it was the practice to feed and clothe troops destined for the tropics, as if these were matters requiring no special attention. A large spirit ration, the same amount of animal food as in a cold climate, heavy cloth clothing, leather stocks, insufficient covering for the head, and deficient amount of cubical space in barracks, were the ordinary provisions for troops on first arrival in India.

As these matters have of late years been more rationally managed, so have the death rates of the European armies diminished. The results of improving the accommodation of the soldier, and of bringing to bear upon his circumstances the simplest Hygienic laws, have been so fully demonstrated in diminished sick lists and lessened death ratios, that the views we have just hinted at must be self evident, that climate destroys only its *units*, while the ignorance or incapacity of Man to adapt himself to the altered conditions in which he finds himself, has caused the sacrifice of *thousands* of lives.

We are inclined to think that the time will come, in the onward march of civilization, when Man will be able to adapt himself to any condition or extreme of climate without injury to health, shortening of life, or deterioration of race. It is pretty certain that the present generation will not live to witness this glorious triumph of the ability of the human intellect, to understand, in full, the fixed and immutable laws of life ordained by Infinite Wisdom; but we are making rapid progress in the unravelling of Nature's secrets, and, with the eye of faith, it is possible to discern the coming time—when the natural duration of life shall not be shortened through sin and ignorance, and when the bulk of mankind shall run their course, and fall at last, like ripe fruit, from natural decay.

There is much to be accomplished yet before these results can be obtained, but progress is being made, and though slow, it is certain. The Registrar-General's returns show very clearly that the value of life in England and Wales is improving. The proportion of *natural* to *unnatural* deaths, that is, of deaths from age and decay of vital powers, to deaths resulting from disease and violence, is yearly increasing—and, so far as can be judged, will continue to increase. The death rates of large towns have already been much diminished since the introduction of sanitary improvements. They are still susceptible of diminution, and will gradually dwindle as the people learn to understand how to preserve health and to withstand the agents which are obnoxious thereto.

It will be a glorious epoch in the history of the human race when the fountains of sin and uncleanness from whence proceed

> "All maladies
> "Of ghastly spasm, or racking torture, qualms
> "Of heart sick agony, all feverous kinds,
> "Convulsions, epilepsies, fierce catarrhs,
> "Intestine stone, and ulcer, colic pangs,
> "Demoniac phrensy, moping melancholy,
> "And moon-struck madness, pining atrophy,
> "Marasmus, and wide-spreading pestilence,"

shall be dried up at their source!

A learned physician and physiologist some years ago in discussing the invasion of cholera in Great Britain, and the question of sanitary reform, gave utterance to his thoughts on the subject of preventable human suffering, as follows:—

"Few of us who have been brought into contact with the profligacy, guilt, disease and misery of our large towns, but have felt our admiration at that frame of man which is so wonderfully made, strangely mixed with horror at the uses to which it is put, at the sufferings to which it is liable, and at the kind of death to which it is doomed. We perceive a startling discrepancy between the majesty of the thought to which the study of our profession has led us, and the baseness of the existence which the practice of that profession teaches us to know.

"A deeper study and consideration however of this apparentd iscrepancy, enables us to penetrate at any rate to a certain extent into its significance and source, and to see that it has no real existence. We are not long in discovering that many of the physical ills of which we are the witnesses, have no necessary participation in the scheme of Nature; but that they are, in fact, the result of direct

opposition to her laws, and exist only as exceptions to the orderly arrangement of events.

"We perceive that in the vast majority of instances the removal of the sources of these evils is within the power of those who suffer from them, and it is not difficult to understand that the existence of such evils has been permitted, for the very purpose of exciting into activity the power and mental force, which, without such stimulus, would have been but half unfolded.

"Without attempting to penetrate into mysteries which do not concern our immediate avocations, we are yet irresistably led to the conviction that the ground-work of many of those evils to which flesh is heir, lies not so deep, but that human agency can root it out and banish it from the world. When this conviction is reached, physical evils lose much of their sombre coloring. We come to regard them as temporary, as dependent upon ourselves ; as arising necessarily from the Divine scheme of which we dimly trace the outlines, inasmuch as the very existence of will, and of the unbiassed action of imperfect beings who are to be perfected by exertion, necessarily implies deviations and failures, and the suffering which must inevitably follow."

In no country in the world have the good effects of sanitation been more apparent than in India—the country of all others which from its geographical position, soil and temperature is so exposed to the health-destroying influences of terrestrial misamata. The deadly poisons of cholera, dysentery, and remittent fever we have not yet succeeded in subjecting to the analysis of the chemist, or to the scrutiny of the microscopist ; but we know full well under what conditions they best thrive and produce the greatest destruction of life. The conditions which favour the development of these poisons, are more or less under control, and whenever we hear that such and such a corps has lost 10 per cent. of its strength from cholera, dysentery or fever, we may safely conclude that human foresight and knowledge of the laws of health and disease, might have prevented the waste. An instance in point is better than a cart load of theory. Let us take the later history of the barracks in Fort St. George, and see what has been done to diminish unnecessary sacrifice of human life. The barracks, be it observed, were intended for a single European corps, and have always been occupied by a full Regiment or a wing. From 1829 to 1838, we observe from the published reports of the Medical Board, that the annual death-rate of troops to strength was 42·9 per thousand.

In the 10 years ending March 31st, 1857, several improvements having been effected in the quarters and accommodation, it has been ascertained that the average annual mortality fell so low as 29·6 per thousand—a saving in itself of about 13 lives annually (supposing the strength of the Regiment to be 1,000 men) over the earlier period.

In the year 1859 some radical alterations were made, with the view of giving more air and space to the soldier. The sea face of the Fort wall was lowered throughout; officers' quarters in the upper story of the barracks given up, and converted into additional rooms for the men; a verandah for upper and lower stories constructed, enabling the men to exercise in the heat of the day, without risk of injury by solar exposure; old privies abolished and a dry system of conservancy introduced. Mark the results immediately following these measures. *In* 1860 *and* 1861 *H. M.'s* 43*rd Regiment lost by death in these barracks, at the rate of* 7·05* *per thousand per annum,* and this diminished mortality is the more remarkable that the men had just returned from active service in Bundlecund and were much debilitated by malarious fevers. Two very severe epidemics of cholera passed over the town of Madras in these years. The soldiers in barracks escaped these visitations. (A man and a woman living in the married quarters outside the barracks, died.) The troops were not placed in quarantine, although when the epidemics were most severe, it was judged prudent to forbid them going into those parts of the town where the disease was raging. The favorable conditions in which the troops existed—breathing plenty of fresh air, enjoying cleanliness of buildings, and person, drinking a pure water, and eating wholesome and sufficient food, were sufficient to enable them to withstand the pestilence which, for weeks and months, surrounded them on all sides. The death-rate of H. M.'s 43rd Regiment for the period stated is probably lower than will be maintained for a series of years, in the locality we are now discussing, but there is every encouragement to hope that no very marked retrogression may occur in the present decade.

In the instance just related we have seen the mortality brought down from a high tropical average to something

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* In 1860 (9 months), 10·17 per thousand.
1861 „ 3·93 „

below what is usual in garrison towns in England and Wales. These results have been obtained, not by favorable changes of climate, or improved treatment of the sick, but by a more general appreciation of the conditions necessary to the healthy existence of Europeans in tropical latitudes. In fact, by exerting the same amount of care and foresight to obviate the exhausting effects of prolonged high temperature on the body, as had been already done by Arctic voyagers, to shield their ships' crews from excessive cold, these favorable results have followed. Man has triumphed over climate in either case, and what has been done in isolated instances, can be done again, in all time to come, with increasing perfectness, as regards the results.

Another instance of progressive diminution in European mortality, as the result of improved means of preserving health, and we shall have concluded our argument, as regards the minor importance of "climate," or rather so much of climate as is included under the heads of temperature, moisture, seasons, and atmosphere, in influencing mortality.

Mr. Eyre, Inspector General, late of the Madras establishment, and Principal Medical Officer of the Ceded Districts, before leaving India, drew up a short, but very valuable paper showing the statistics of health and mortality in the troops at Bellary for a period of 30 years—from 1829 to 1858. This period he subdivided into three decades—

1*st Period.*—"During the first 10 years, from 1829 to 1838, Mr. Eyre states.—The troops were inside the Fort occupying barracks in form of squares, low roofed and narrow; overcrowded; batten windows; no venetians; no glass to doors; no roof ventilation. Confinement to barracks during the day enforced, and no recreation provided. *Dress*—cloth coats on all duties. *Head dress*—the chako—leather stock. *Rations*—beef and mutton, bread and rice, no vegetables. *Spirit Drams,* in the morning and mid-day. A licence to drink the first three days of the month."

2*nd Period,* 1839 to 1848.—"Troops still inside the Fort, and occupying the same barracks. Some improvement had been introduced in the rations, and less licence allowed to drink. Morning and mid-day dram latterly discontinued. Restriction to barracks all day lessened. The first two years of the period very sickly.

3*rd Period,* 1849 to 1858.—"Regiment removed from the Fort to the fine barracks built on an open plain, freely exposed to the winds; good soil; no bazaars near. Two companies which remained behind in the Fort until 1851, having plenty of space and air, enjoyed good

health. No restriction to barracks; reading room, and amusements provided; punkahs introduced; rations improved by variety; vegetables issued; beer and porter substituted for spirit, in part. Delirium tremens rare in consequence, also diminished frequency of the entry "Died in barracks," so common in old returns. Dress improved; light clothing introduced. Head better protected from solar rays.

Results of the three periods in mortality to strength.

			Total.
1st Period...	From ordinary diseases.. 24·7	54.8 per thousand.	
	„ cholera. ..... 30·1		
2nd do. ..	„ ordinary diseases... 23·7	60·1 „	
	„ cholera..... ..... 36·4		
3rd do. .. .	„ ordinary diseases.. 11·1	21·8 „	
	„ cholera..... 10·7		

The great fault of all India statistics is that they do not show in a clear form what amount of inefficiency is caused by sickness which need not exist, as distinguished from that which, with our present imperfect knowledge of Nature's laws, appears not to be preventable. A summary of the health statistics of Bellary, such as Mr. Eyre has made, shows in a very clear manner to what causes must be attributed the enormous decline in mortality from 57·5 per thousand per annum in the first twenty years, to 21·8 per thousand in the last ten years of the period. The instances we have given are, we think, sufficient to show that much has already been done, and is still doing, to ameliorate the sanitary condition of the British soldier in India. Were other instances necessary we might, in this Presidency, point to the station of Wellington on the Neilgherry Hills, where the mortality has been reduced from 35 per thousand in the first three years of its occupation by troops, to 14 per thousand in the last three years. To the several stations in Burmah, where the mortality has been of late years lower than in most garrison towns in Great Britain, and we might further refer to the reduction of mortality which has been effected at Trichinopoly in the Southern Division, and at Cannanore on the Western Coast.

Dr. Ewart, at the period of writing the work under review, does not seen to have sufficiently appreciated the fact, that the sanitary condition of the European Soldier in India had already begun to be improved. It is true that most of his figures relate to periods antecedent to the great sepoy rebellion of 1857, and that since its suppression the morta-

lity of Europeans in Southern India has diminished, at a rate altogether disproportionate to the decrease observed in former years. Dr. Ewart observes that it "is principally to "the advancement of therapeutical science, that the morta- "lity caused, directly or indirectly, by malaria, has mani- "fested a considerable diminution in modern times."

We do not dispute this statement, and we should probably quite agree with our author if we could settle the exact meaning to be given to the term "Malaria." The decrease in the mortality from paroxysmal fevers of late years, and contemporaneously with the more liberal employment of Bark and Quinine, is, we think sufficiently proved.

There are other varieties of fevers—typhoid, typhus, and ephemeral which there is no evidence to show are due to "malaria," restricting that term to its real meaning "bad air" or "*emanations from marshy ground.*" So, again, with the most fatal of all diseases to which Europeans in India are liable, viz., dysentery and cholera, there is no proof of the slightest value, that the malaria which produces paroxysmal fevers is capable of giving rise to these.

We are therefore unable to concur with Dr. Ewart, in his estimate of the immense results to be obtained by a drying up of the sources of marsh miasm, for though it may be very true as stated by our author, that "when these uncount- "able sources are dried up, when the demands of animal "life, and the supply of vegetable growth are so nicely "balanced as to leave no large collections of either unutilized, "that our race may be able to occupy India on a completely "different footing from the present," yet if sanitary science remained at a stand still, if our barracks were left unventilated and our drains and cess-pools were permitted to contaminate the soil and water supply, as they have been allowed to do in bye gone years, the sources of malaria might be dried up over and over again, without materially affecting European mortality in India. This will be pretty evident if we consider for a moment, that dysentery causes about 25 per cent., cholera 20 per cent.,—total about 45 per cent. of the whole number of deaths of Europeans in India, while fevers, of all kinds, including the continued types, cause only about 10 per cent.

If by the term "malaria" Dr. Ewart means to include the specific poisons of cholera and dysentery, as well as those of fevers, we agree with him in considering that the re-

moval of the sources of these several diseases, is the great desideratum in all efforts at sanitary reform, and that when they cease to exist, or when man better understands how to withstand their evil effects, climate and temperature will offer no effectual barriers to the colonization of the country, by the Anglo-saxon race. But we object to so wide on application of the term malaria, as permitting of much loose and illogical reasoning.

It would be somewhat strange to take up a book on the health of troops in India, without coming upon the "stock argument," against official folly and recklessness in choosing unhealthy sites, and squandering fabulous sums upon buildings destined to be shortly abandoned, and consequently we were not surprised to see that Dr. Ewart had thrown a stone at the Berhampore barracks. These buildings, we are told, have cost the Government since the year 1757, a sum of money nearly equivalent to £17,000,000!! Dr. Ewart took these figures on the authority of Sir J. R. Martin, in his book "*On the Influence of Tropical Climates,*" page 424, and on referring to the original statement we find the amount thus curiously made up.

	Rs.	A.	P.
Original cost in 1757.....	3,823,657	14	8
Compound interest on this sum for 77 years, at five per cent.....	163,702,404	0	0
Average annual charges for repairs during 77 years, at 18,000 per annum.	1,386,000	0	0
Total...	168,912,061	14	8
Total £	16,891,206	3	10

Thus the actual outlay in money was but little more than *half a million* of pounds sterling for construction and repairs.

The idea of adding compound interest at 5 per cent. on the original outlay is a very ingenious one; but considering that Government had the use of the barracks for 77 years, and that no deduction is made on the other side of the account for the amount saved annually as rent, we think that most persons having a knowledge of the laws of property, would be inclined to strike out the rather alarming item of 16 millions and odd from the expenditure side as wholly fictitious!! How such a self-apparent blunder could have crept into the original estimate of cost, is a mystery. In private life if a

man builds a house, say at a cost of £2,000, and occupies it himself, the yearly value or rental being £200, he does not at the end of 15 or 20, or 50 years, in estimating the cost of his house, debit the account with "interest and compound interests" on the capital expended for the number of years he has had the use of it. On the contrary, he estimates the yearly rental, or market value, of his house as an actual return of so much interest annually for the original sum spent in construction.

A buyer of house property would be rather astounded to learn of a given house, say 77 years old, that a sum of money, equivalent to 34 times the actual cost of construction and repairs, had been "expended" upon it, and yet this is exactly the mode of calculation adopted to bring the cost of the Berhampore barracks up to the round sum of £17,000,000 sterling.

As we have stated before Dr. Ewart is not responsible for thus exaggerating the sins of the Indian Government in foolishly wasting money, but he seems to have adopted the figures without questioning their accuracy, and to have omitted the explanation which Sir J. Ranald Martin gave of the total amount, viz., that it "included capital and interest." We have drawn attention to this subject merely as an illustration of the necessity for exercising great care in dealing with figures at second hand.

It may be remarked, parenthetically, that the latest authority* who has written upon the Berhampore barracks, is of opinion that, with certain sanitary improvements and precautions, they might be reinhabited by troops without material risk to health or life ; and it is further shown that a portion of the barracks have been so reoccupied—while the station is reported to be second to none in Bengal for salubrity, so far as native troops are concerned.

We observe that Dr. Ewart illustrates some of his propositions by assigning a definite money value to a soldier. The calculations so made are about as trustworthy, as those we have referred to in connection with the Berhampore barracks. Dr. Ewart is not responsible for them it should be stated : he simply follows the example of those who have preceded him in statistical investigation, in estimating the

* Dr. Norman Chevers, Indian Annals, vol. vii, p. 225.

value of the soldier in one scale, and £100 sterling in the other, as equivalents. Yet the items going to make up the £100 may be disputed, for it is not easy to see how the cost of an Indian recruit,* viz., the actual outlay on his account, comes to that sum. The services of a healthy, intelligent, and disciplined soldier cannot have a money value assigned to them. They are something beyond all price. On the other hand, the unwilling performance of duty by a skulk, who apportions his time pretty equally between the guard room, solitary cells and hospital, is dearly paid for at any price, and the Government, in a pecuniary sense, is well rid of him, even when he falls a victim to his own vicious courses.

Dr. Ewart's calculations as to the money gain to Government which would result from a more liberal expenditure of quinine, we regard as utterly fallacious. If quinine were a panacea for all tropical disorders—which it is not—or if the prophylatic use of that valuable drug kept away malarious and non-malarious fevers, both of which questions, and especially the latter, are at the present moment involved in grave doubts—and if it were possible to assign a money value at all to the trained soldier, *then* it might be worth while to consider the basis on which such calculations are made.

It is evident from a perusal of Dr. Ewart's book that he looks upon malaria—the marsh and jungle miasmata—of the country, as the great bar to the European colonization of India. He speaks of it as a "hydra-headed monster" to be assailed in his strongest holds, and there completely annihilated. "Malaria," he says, "must no longer be per-"mitted to be the greatest foe to our armies in quarters, as "it is in the field." We think Dr. Ewart has overrated the magnitude of the evil, for it is evident as we get deeper into the book (p. 48), that he uses the term malaria, only in its legitimate sense, and speaks of it as a product, "essen-"tially connected with, or dependent upon, decomposing "vegetable matter conjoined with the influence of high "temperature, and the presence of a limited quantity of "moisture."

Our author cites examples to show that the sources of

* The present fixed rate of charge by the Home Government, for each recruit or soldier sent to India, is £10. The average of transport charges is from £17 to £20 more. This is the whole actual cost of landing a trained soldier in India.

intermittent fevers in the neighbourhood of London have been dried up by drainage, and reclamation of swamps, and uncultivated land. The Essex marshes, the Fen districts in Cambridgeshire and Lincolnshire used to be notorious for agues. This class of diseases has, under the influences of drainage and improved cultivation, nearly disappeared from Great Britain. Not very many years ago the London hospitals contained at certain seasons of the year, numerous well marked cases of tertian and quotidian intermittents. At the present time they are exceedingly rare, and as Clinical Clerk at one of the largest hospitals in London a few years ago, we do not remember seeing half a dozen cases of ague in a year of close attendance upon a popular physician's practice. All this is admitted, and we are quite prepared to go along with Dr. Ewart, and to say, that as waste lands come under cultivation, and the population of the country is increased, and animal and vegetable life attain that balance necessary to the requirements of civilized man, that malaria will then cease to produce dangerous fevers, or shorten human life. But having so got rid of malaria Dr. Ewart seems to imagine that Europeans will then be able to exist in the country, and to increase and multiply, as well as they do in temperate climates.

We are constrained to say that the very arguments used by Dr. Ewart, if they prove any thing, show beyond a doubt, that the annihilation of malaria is not necessarily followed by the wonderful results, in diminished sickness and mortality, which he has pictured to himself. Admitting that Pimlico, Westminster, Lambeth, and Bermondsey were snipe bogs many years ago, and that the soil exhaled a deadly malaria, and that intermittent fevers have, with the march of civilization, been banished from those regions, we would ask, are there no other diseases of the zymotic class which furnish their quota of mortality? Agues are gone, but are the districts free of typhus, of typhoid fevers, and diphtheria? Were the districts of Bermondsey and Lambeth exempted from the cholera epidemics of 1832, 1849, and 1854? If it could be shown that the diseases we have mentioned diminished in frequency and fatality, with the gradual extermination of malaria from the soil, Dr. Ewart might ask us to believe with him that similar results would follow the drainage and reclamation of waste and jungle lands in India; but as there may be some difficulty at present in any one proving such a position, we are compelled to observe that malaria is *not* the only drawback to Euro-

pean existence in India, and that the causes of a great portion of our soldiers' sickness and mortality must be looked for elsewhere, and that when discovered they will be found to be more under human control than the dreaded malaria.

The difficulties in the way of introducing a sanitary system, which in time might be effectual in destroying the sources of malaria, are acknowledged by Dr. Ewart. He states, and we fully agree with him, "It will, I feel convinced, be "impossible to introduce any widespread system of sa- "nitary reform, until improved architecture in the con- "struction of domestic buildings, the extension of the "spade and plough, increased population, increased wealth, "higher intellectual cultivation, and the suggestions of the "sanitary philosopher applied to districts, villages, towns, "and cities, have all, working more or less in harmonious "co-operation, reclaimed the greatest part of the millions of "acres of marsh and waste lands which exist in such abun- "dance in this country." When all this is accomplished, and the causes of disease are better understood by the people, there will be a glorious future for India. The past progress of sanitary science has been infinitessimal, but as the bulk of the people become amenable to the educational influences now at work, so will the laws of health meet with more attentive consideration, and disease and premature mortality be reduced to their minima.

There are some points connected with the prevalence or absence of malaria, which are by no means easy of comprehension, and a discussion of them would be so far advantageous, that facts might be educed which would add materially to our knowledge of the causes of paroxysmal fevers.

We have neither time nor space to do more than throw out a few suggestions for the guidance of those who have opportunity to work out the details of the interesting problems to which we would briefly refer.

In the first place, we want some explanation of the well ascertained fact, that certain stations have for years been noted as feverish localities and then again healthy, without any perceptible changes in the surrounding conditions, as regards drainage, vegetation, cultivation, &c. The barracks at Berhampore for instance may be cited as a case in point. Abandoned in 1826 on account of the deadly fevers which

decimated the troops, the station was subsequently occupied by a native corps, the men of which enjoyed excellent health. Since the mutinies, it is understood, that Europeans have again occupied the barracks, and without suffering particularly from fever.

The old military station of Nundydroog in the Mysore country, at one time a healthy place, was abandoned many years since on account of the great prevalence of fevers. Of late years the hill plateau has been used as the sanitarium of Bangalore, and the inhabitants of the Pettah at the foot of the fortified rock are stated to be healthy. Other instances might be referred to, did space allow. The causes of these observed variations are worthy of investigation.

Taking the map of India, and examining the hill and jungle tracts above the 17th degree of Northern Latitude, and those in the south, we find on further inquiry some very remarkable facts in connection with the seasonal prevalence of malaria. In the north, that is in Nirmul, Goomsoor, Nagpore, Orissa, Central India, and the Himalayan terai, the *rainy season* is the time of all others when malarial fevers most abound. The jungles at this season of the year are positively poisonous to human beings. In Southern India, we have the Mysore, Neilgherry, Annamally, and Pulney forests, with the dense vegetation of the Western Ghauts, and the scantier flora of the Eastern ranges, of which we may mention the Shervaroy, the Collamully, Javady and Yellaghiri Hills. In all these forest tracts the healthy season is *so long as the rains last.* In the dry months many of these forests are practically uninhabitable. We do not remember ever seeing this subject discussed in print. The facts we have stated may be depended upon, but the rational explanation of them is still wanting.

There are again tracts of country noted for the prevalence of malarious fevers, where the common sources of malaria (jungle and swamps) are non-existent, and in which fevers abound. There are places on the Mysore table land, dry and bare of vegetation, where to sleep a night is almost a certain means of producing an ague of an obstinate and persistent type. What, for instance, is the source of fever at Seringapatam, and at Yelliwal in Mysore? What are the views of professional men in India practically acquainted with the subject, on the ingenious theories propounded by the late

Dr. Heyne, that the terrestrial emanations, where ferruginous hornblende abounds, are, in themselves, without the addition of decaying vegetation, sufficient to produce the worst types of fever?

The "Kamptee fever" some years ago was much dreaded for its obstinate recurrence. We have heard but little of it of late years. At one time it was the fashion to attribute the prevalence of fevers at this station to winds blowing over a belt of jungle some twenty miles distant. In all these doubtful cases the fever poison is probably of very local origin. Its source or sources, require very careful examination.

As artificial irrigation of land is being extended for rice cultivation, it is very desirable to ascertain what the effects of such cultivation have been upon the health of the inhabitants of various districts. In the North-west Provinces, it is stated, that fevers have increased in the neighbourhood of irrigation canals. In the delta of the Godavery, and in Tanjore, we have never heard of fevers being attributed to irrigation. It is stated, though we cannot say on reliable authority, that since the increase in wet cultivation near to Trichinopoly, the mean temperature of the air of that station in the hotter months has been sensibly reduced. It is quite capable of proof that the European troops there have suffered less of late years from malarious fevers, than they did when the amount of wet cultivation was less than it now is.

The neighbourhood of swamps and marshes near to the sea is so far exceptional in character, that such situations are nearly always free from diseases produced by malaria. It is very desirable to ascertain whether this immunity depends, as is generally supposed, upon the non-generation of marsh miasm, or whether it may not be better explained on the hypothesis, that the ozone of the sea air decomposes the malaria the instant it is liberated. All military stations on the Coromandel Coast, which are exposed freely to the influences of the sea breeze, are noted for the infrequency of intermittents amongst the troops—on the Western Coast when, at certain seasons, land winds blow down from the jungles of the Western Ghauts, fevers are common. But in the writer's opinion all *malarial fevers will be found to prevail most generally in those situations, which, from geographical position, or defective site, are removed from the influence*

of sea air. These views require either corroboration or disproof, in connection with a better understanding of the laws regulating the diffusion of malaria.

It probably has been observed by most Medical men of experience, that malaria affects very differently those who are born and bred in certain districts, and those who are mere casual visitors. It is not uncommon in Southern India to find the aborigines of our most feverish localities, the slopes, and lower ranges of the higher mountain tracts, Neilgherries, Anamallays, Pulneys, Shervaroys, and Orissa, enjoying perfect health;—thriving in places, where no European or low country native could live for a week, and free from every symptom of malarial poisoning. The *Kaders, Mulcers, Corumbers,* and other hill tribes of Southern India, get fever only as a result of a visit to the low country, which they dread, quite as much as a native of the plains does an expedition to the Hill forests.

We have noticed similar results to follow in the case of Europeans, who, for a considerable length of time, have existed in a malarious atmosphere. One of the severest cases of remittent fever we ever saw occurred in an officer who, after residing six months in a notedly insalubrious forest, visited the Eastern Coast. Three weeks after leaving the malarious locality, he got a quotidian ague, which subsided under treatment, but returned again in a severe remittent form fourteen days after the first attack.

Natives of India are very susceptible to malarious influences. Thus a native of Madras gets fever at Bangalore, and the Bangalore native or Western Coast man will have fever in Madras. A curious fact has been noticed with regard to troops proceeding from French Rocks to Bangalore—the former supposed to be a malarious station and the latter not—that the natives do not suffer much from fever, while on a three years' tour of duty at the French Rocks; but that on getting to Bangalore, and for months subsequently, they are prostrated by agues. Within our personal knowledge this has happened to two corps, the 12th and 20th Regiments of Native Infantry in the last six or seven years. These peculiar tendencies of the malarious poison to indefinite suspension of its usual effects, and prolonged incubation in the system, are subjects regarding which very little information has been published, and which we should be much pleased to see investigated more closely.

Lastly, there remains to be determined the law of periodicity in fevers. It is a subject which cannot be considered as worked out, until some one having time and opportunity will tabulate and analyse with extreme care, the results of some thousands of accurate observations as to the hour at which the paroxysms begin and end, their connection with lunar periods, and cyclical changes in the body. Since Dr. Laycock wrote we are not aware that any advance has been made to obtain a precise knowledge of the causes influencing periodicity in fevers.

We will add only a word or two on the subject of treatment. In testing the value, some years ago, of quinine and other reputed antiperiodics in upwards of a thousand cases of quotidian and tertian fevers, the results of the experiments being at the time accurately recorded, the writer arrived at certain conclusions, the chief of which may be briefly added.

1st. Quinine is the most effectual remedy known for arresting the periodical paroxysms of malarious fevers.

2nd. Quinine has little or no power in warding off the fortnightly or monthly relapses which occur in severe cases of malarial poisoning.

3rd. The prophylactic use of quinine by persons exposed for a limited period to malarious agencies, is generally successful. In cases where the exposure is continued beyond a week or ten days, the quinine administered as a prophylactic does not prevent fever. These conclusions agree with those arrived at by Drs. Livingstone and Kirk in South Africa.

4th. Some of the indigenous febrifuges have considerble anti-periodic powers. Many of them equal to cinchona bark, but all are inferior to quinine.

5th. The tendency of a considerable number of periodic fevers is to cease after two or three paroxysms, and they often do cease after simple treatment, *not because* of the medicine administered, but from purely natural causes. Nearly 50 per cent. of periodic fevers come under this category, as determined by the writer's experiments in the use of colored water, in lieu of more active remedial agents.

It will be observed that these conclusions differ materially from Dr. Ewart's. That gentleman believes that the prophylactic use of quinine for the malarious season of the year, for all European troops would largely repay the outlay, in improved health and efficiency of the men, and in

the value of the number of lives annually saved. We have in this Presidency known quinine used as a preventive of fever, when troops or others were marching through malarious jungles, with excellent effect. We believe this to be a very legitimate use of quinine, and one that should be practised whenever there may be any risk in marching troops. But as regards men in quarters, we hold that the best plan is to make the latter malaria proof, and that very ordinary and simple precautions are sufficient for this purpose, if the original site and construction are all that is desired. If they are not, they should be made so at any cost, or abandoned altogether.

One great argument for keeping European troops at Hill stations, has been the supposed immunity from malarious fevers at certain elevations above the sea. The height at which malaria ceases to act as a poison, depends probably upon locality more than actual elevation. The tops of small hill ranges, exposed freely to sun and wind, are healthier places of residence than the hill slopes or valleys of greater elevation. The experience of our own hill ranges tells us that malaria is produced at the most elevated station we have. In Ootacamund, out of 140 deaths which occurred in the native bazaar of that place in 1861, (population stated to be 12,000) 103 are reported to have occurred as the result of malarious fevers. At Wellington again, where the European barracks are built 6,500 feet above the sea, remittent and intermittent fevers have been found to prevail for a month or two before the setting in of the rains of the S. W. Monsoon. The periodical malarial emanations are, no doubt, more marked in their effects at lower elevations, but they are sufficiently distinct at Hill stations to show that the location of troops at great elevations above the sea, does not remove them above what is spoken of as "fever height."

We cannot now go into all the arguments of "Hills *versus* Plains," but will simply record our belief in the words of Sir Roger de Coverly, that "there is much to be said on both sides of the question." We believe it cannot be practically settled for many years to come. The stations in the plains have never yet had a fair chance. We have already shown how simple improvements in barrack accommodation, ventilation, food, drink, and clothing, have been followed by an immediate and permanent reduction in mortality. To doubt that the removal of sources of disease in the plains will ulti-

mately enable the European soldier to enjoy health and vigor, where he is essentially wanted, may be natural to some minds, but not to those who have witnessed the vast strides which have already been made, in the attainment of this much desired object.

A late writer, Surgeon Major Greirson, Bombay establishment,* thus thoughtfully expresses his belief in the future amelioration of the conditions of those exposed to Tropical service.

"It has been said by a high authority, European soldiers in India cannot maintain health or vigour in the plains. Without disputing the statement, the fact, it is avowed, has not been proved. The statement, it may be said, rests on experience. But the experiment has never been made, nor experience gained in circumstances which command respect. If the foregoing remarks prove any thing, they show that the conditions of the experiment have never yet been pure and simple ; that accessory conditions have produced disturbing effects and vitiated the results. What is called experience therefore in this case, is fallacious. We may not affirm that the assertion is wrong : we affirm that the conclusion is premature."

In arguing for the possibility of making India a healthy country, by general and well directed efforts at sanitary improvement, we may be met with the old objection of Twining's, that the pure European race in India becomes extinct in the third generation, unless new blood be infused into the deteriorated stock. This might have been true enough in Twining's time, but we doubt if it would be so now. The fact is that European Government servants, or members of the mercantile community, do not look upon India as a permanent home. There are many reasons why the children born to them in India should be sent to the mother country, for an education to qualify for the battle of life, and so it has happened that the experiment regarding the alleged deterioration, and extinction of the race has been an inconceivably limited one, and that the data acquired in regard thereto are altogether valueless for the settlement of the question. We have a strong suspicion that the records of the French settlement at Pondicherry could show well authenticated instances of pure European inhabitants of the second and third generation, and we commend the investigation of this point to the notice of Dr. Collas, whose acknowledged merit as a scientific investigator, well qualifies him for such a task.

* Trans. Medical and Physical Society Bombay, No. vii., N. S., page 43.

The authorities who advocate a more extended use of hill ranges for the location of troops, generally omit to mention on the other side of the argument, that to be useful at all, troops should be in such positions as military science indicate to be stratagetical points.

It will scarcely be disputed in these days that India is held chiefly by the sword, and that our "moral influence" in governing the people would go for little, were it not backed up by some 70,000 bayonets, wielded by our own countrymen.

Now such an army judiciously distributed is probably sufficient to secure the internal tranquility of the vast area of the Indian empire, but supposing two-thirds of the force located on mountain ranges, and the garrison duties below entrusted principally to natives, how would it happen in the event of another mutiny and rebellion? Would the small number of Europeans below be sufficient to quell the tumultuous upheaving of populous and warlike races?

It seems to us that if hill ranges offer superior advantages for the location of the great mass of European troops, it is just as clear, that as the paid defenders of the State, soldiers are practically useless to the Government they serve, while occupying positions which do not require to be held as military posts.

A soldier is as much a servant of the Government as a civilian, and his presence is required to prevent tumult and disorder, as much as to suppress them when they arise. It need scarcely be argued that if the Fort of Delhi and its arsenal, had been held by Europeans in 1857, instead of by natives, it could never have become the nucleus of mutiny and rebellion, as actually did happen. The suggestions for the massing of troops on hill ranges may find a certain degree of favor with superficial thinkers, but they appear to us to be impracticable and to encourage a shirking of responsibility on the part of those whose imperative duty it is to provide healthful accommodation and employment for soldiers in the stations where their services are actually required.

That malignant cholera, dysentery, and fevers are to be banished from our Indian cantonments, by enlightened and wisely ordered sanitary precautions, no one who has thought seriously on the subject can doubt. That venereal diseases, which cause about one-third of the admissions into hospital, could be made to disappear, under a well regulated

medico-police supervision of public women will also be admitted by most of those who are practically acquainted with the enormity of the evil as at present existing. Having banished the sources of the foregoing diseases from our cantonments, there is nothing to prevent troops in India being as healthy as their brethren in any temperate climate. It must not be forgotten that every improvement in the ventilation of barracks, in drainage, in the simplification of means for removing and utilizing effete organic matters, in the quality of food and drink, in the rational use of clothing, in facilities for bodily exercise, cleanliness of person, and useful employment of mind and body, helps to diminish sickness and mortality from the causes we have named, and from some others in addition. The more this view of the subject is steadily kept before the ruling authorities, the sooner will the question of the practicability of keeping troops in health on the plains and table lands of India, be practically solved.

The position of the Government in regard to the British soldier is acknowledged to be one of the greatest responsibility. For State purposes it is thought right to subject military servants to certain unnatural conditions, as regards personal liberty. To instance a few of these. The soldier cannot choose his lodging as the civilian can, but is obliged to occupy with some 70 or 80 persons similarly circumstanced, an enclosed space, in which, if the arrangements for ventilation are not of the most perfect character, the whole of the occupants are slowly poisoned by respiring air tainted with the effete exhalations of their own bodies. Now, in this matter, it is clearly the duty of the State as responsible for the health and safety of its defenders, to make such provision as science and art can accomplish, to give to every man an ample supply of pure air to breathe. If this cannot be done in large barracks, and within a limited area, then it must clearly be right to consider whether these huge and costly structures might not be dispensed with, and the troops spread out in smaller buildings, over a larger surface. In a climate like that of India, a man must have ample breathing space, and without it, a high standard of health cannot be maintained.

Again, with regard to food, drink, and clothing, the necessities of military life do not permit the soldier a choice as to the quality of the articles he gets, and it is equally the duty of the State to supply them in such quantity, quality

and variety, as experience and scientific knowledge have proved to be requisite for health and enjoyment. How far this has been done we would rather not give an opinion, except to observe that there is ample scope for improvement, notwithstanding all that has been effected in the last 15 or 20 years.

The most unnatural condition of all, and the one which conduces most to crime, and a certain class of diseases, is that of celibacy, which is practically enforced upon, from eight to nine-tenths of, the army. Although this unnatural mode of life is, so to speak enforced, no effective steps are taken to avert the evils it entails. These are seen elsewhere than in the venereal wards of the hospital. As untidy and comfortless homes drive the British artizan to seek enjoyment in the gin palace, so does the absence of social comforts and endearments tend to make the young soldier in India a godless and disreputable individual—a prey to the vilest passions of man's nature, careless of the future, and reckless of health and present character.

Returns of crime and punishment, and of sickness and mortality, in the "married" and "unmarried" members of the army in India, bring out some very curious contrasts, which the Legislature would do well to ponder over, before coming to the conclusion that Europeans cannot be maintained in ordinary health in the plains.

The selection of recruits for India is a subject of the greatest importance in regard to the health and efficiency of the army. It has been our misfortune to witness very great laxity in bye gone years, in the choice of men to replace casualties on the Indian establishment.

Cases of phthisis have been sent out, to die on the voyage, or soon after landing. Epileptics, maniacs, and cripples, have also not been unfrequently considered as proper "food for powder," while the number of delicately formed, and growing lads who could not stand the drill, supposed to be necessary for their transformation into soldiers, have been too numerous to permit of any definite estimate being formed of the proportion which they bore to the total of the drafts. It is with much gratification we observe that under the new regime every soldier will land in India, instructed in his drill, and effective, so far as training can make him, for active duty. On the proper training of recruits Dr. William Aitken, of the Army Medical School at Chatham, has

recently published some very excellent hints, which should be placed in the hands of every Military and Medical officer concerned. The fact of all young soldiers being made to undergo a rational course of drill, calculated to develope their physical and vital powers, would, in itself, lead us to anticipate a very perceptible reduction in future years, of the ratios of sickness and mortality in the army at home and abroad now obtaining.

In concluding these observations upon the subjects touched upon in Dr. Ewart's book, we regret that space does not permit of more detailed notice of some of the later chapters. We cordially agree with Dr. Ewart, as the views here expressed already show, in thinking that "there is reason to "believe that future chroniclers of the Vital Statistics of "the Anglo-Indian armies will have it in their power to "present to the world a brighter and more satisfactory "picture than it has been the author's lot to portray,—if "due attention be paid to the common sense dictates of "sanitary science."

Experience tells us that herein lies the difficulty. It is easy enough to get persons in authority to admit, in the abstract, the evils of overcrowding in barracks, of indifferent food, drink, and clothing: of bad drainage, and filth about barracks, but when the remedy is pointed out in particular cases, there are always plenty of reasons to be adduced why the admitted evils should remain as they were. The expense of all works carried out for sanitary objects is necessarily heavy, and we fear that since the control of the Government purse strings has been handed over to a department, which sees all objects through a purely pounds, shillings and pence medium, that the stereotyped reply "not provided for in the Budget," has been the finishing blow to many a project, designed for improving the sanitary condition of the soldier. But it is to be hoped that this will not always be the case,—that the possibility of keeping soldiers healthy at stations in the plains, having been proved, no expense or labour necessary to the attainment of so important an object, will be spared by those with whom the fearful responsibility rests, of being in the strictest sense, their "brother's keepers." The hanging of a high official now and then has been suggested as a measure likely to create a stir in the right direction, but without advocating a resort to such a severe proceeding we trust that a brighter day is dawning

upon India, and that a flood of light will ere long be let in upon the gloom and darkness which seem to surround the official intellect when opinions have to be formed and action taken, on questions involving the health and lives of the gallant defenders of the State.

Let us conclude with a story, the substantial truth of which we can bear testimony to.

In the years 1848 and 1849, when Great Britain was visited by an epidemic of cholera, the Coroner of an important provincial manufacturing town, caused it to be publicly intimated that should any cases of that dread disease prove fatal in his district, he intended to investigate before himself and a jury, the circumstances attending the death of every individual so dying.

This announcement caused great indignation. Was not cholera a visitation from Heaven for the sins of the people? argued the religious world, and who was the individual who dared to question the dispensations of Providence? The county Magistrates waxed wroth, and threatened to disallow, in quarter Sessions, the Coroner's fees on all inquests held in cholera cases. The Coroner, a Medical man somewhat in advance of his time, persevered in the course he had marked out as his line of duty. Cholera *did* visit the town, and inquests were held, and verdicts censuring the neglect of owners of houses, and pigstyes, and choked drains, and cess pools, were returned and published in the local papers, and after some 10 or 12 of such inquiries had been conducted, the people bethought themselves that they would wash and be clean, and forthwith a great stir was made, and as the dirt and filth were banished from the habitations of the people, the plague was stayed.

Now in the former visitation of cholera in 1832 some thousands of the inhabitants died, and in the one we have just alluded to, the total loss was under thirty souls if our memory serves us rightly.

Oh, that the residents of this good town of Madras might draw a moral from an over true tale, and set themselves to work in earnest, to root out and banish from the soil the dire curse which is always present upon it! When will the people insist upon having pure water to drink, and wide streets leading to the sea, and drains which shall cease to poison the soil, or pollute the atmosphere with noisome vapours, and when shall we have efficient means

for restoring to cultivated land, that which has been taken from it, and which as animal excreta lies on the surface, and taints the atmosphere, wherever human beings do live and dwell?

When the public can be got to feel an interest in these things, and to treat them as questions of life and death, then our good friend Dr. Urquhart (or whoever may be Coroner of the city at that time,) may cease to vex his soul about the propriety of holding inquests in instances of death from preventable disease, for there will be no more of the pestilence we name cholera.

It will have passed away from us, as the leprosy, and plague have done in other countries, and as we hope and pray, all pestilential diseases may do here—when we have learnt the lesson which God is daily teaching us.

Hand Book of Midwifery in Oordoo. By MEER USHRUFF ALLY, G.M., C.B., Sub Assistant Surgeon, Lecturer on the Practice of Physic in the Agra Medical School, &c. AGRA: Noorul Ubsar Press, 1862.

THE writer or compiler endeavours, by this publication, to produce a work which shall be available, or, as he says in his preface, "particularly suited for that class of intelligent natives who, by perusing the work, can in a great measure direct the Dyees in the management of labours in their own families." With this object he has endeavoured to make the language of the work plain and simple, so that it may be understood by non-professional people at large. This is a result which we should think extremely doubtful. The book may be useful to native Medical students who are familiar with Oordoo and have studied Midwifery at College; but we cannot believe such works are of any use to the general public, or indeed that it is desirable they should be led to read them and thus to dabble in matters which they had far better leave alone, and in which the chances are much in favor of their doing more harm than good. It seems moreover quite possible that the possession, by a certain class of people, of a book of this description, may have a tendency to postpone that advance in common sense and civilization, which shall overcome their present prejudice

against qualified medical assistances. If they are led to believe that, by the aid of this book and the ignorant Dyee, they can secure immunity from the perils of childbirth for their wives, they are not unlikely to hug their silly notions still closer, and neglect an early application for that aid which many ultimately come when too late. Popular works on Medicine are bad enough in civilized countries where malpraxis is punishable by law, but in uncivilized lands they are, we think, ten times worse and therefore by no means to be countenanced. For the students and graduates of the Agra and other Medical Schools the book will no doubt be useful, and much credit is due to the author for the labour of compilation and translation. It is of course a difficult task to translate books on English Science into idiomatic Oordoo; we might almost have said it is impossible, for Anatomical and Physiological discoveries which modern times have witnessed find no expression in that language. Even the copious Arabic is often at fault, and it becomes necessary to write the English word in Oordoo characters, and a most extraordinary and uncouth appearance it makes in a great many instances. We do not see the use of introducing many of these words which have already an appropriate expression in Hindoostanee. We have, for instance, "clitoris," the proper word for which is "tuna," introduced in the form of "Kulaiee toris" which we think would puzzle the most determined of Eastern philologists.

As the author states in his preface, this book is compiled chiefly from the works of Murphy, Churchill, Ramsbotham and Rigby—controversial points having been avoided and the text confined, as far as possible, to strictly practical subjects.

Thirty-two plates are appended, good as regards the subject, but wretchedly executed and affording a dismal specimen of the lithographic art as it at present exists in Upper India.

For a certain class of native Medical students we believe these translations to be of much value, but where it is possible to instruct lads thoroughly in English as is being done now in the Junior department of the Madras Medical College and in the various other schools of our Presidency, such works lose much of their value.

The idea of adopting the composition and language of the authors named to the object of putting them into the hands

of unprofessional persons is, we think, entirely to be condemned. We can fancy an anxious husband sitting down with a frightened Dyee to read the chapter on Uterine Hæmorrhage, while the poor wife was bleeding to death for want of the scientific aid which was perhaps close at hand.

Scientific works are incomprehensible to the general, and especially to the uneducated, public, and their perusal cannot but be injurious in many respects.

Holding this view we cannot applaud *this* intention on the part of our author, and yet so long as native prejudice presents other than female Obstetricians, the case of the native poor is miserable indeed. We do not, however, believe that the remedy here proposed is the right one—or the only one.

Our experience in Madras shows that a well conducted Lying Hospital will not fail to be appreciated at its true value, and in no long time after its institution. Much may be done, too, by sending out to the Mofussil a band of experienced and well taught midwives who could introduce to notice the European system of midwifery—without requiring the sudden overcoming of, all caste prejudice, and the habits of the people of India.

But overlooking this one objection we esteem this book as a move in the right direction. We would gladly see standard works of Medical Science translated into a language, and in an idiom, easily to be comprehended by natives. That they should read with ease and with profit requires either of two things—a perfect knowledge of English or a language suited to their comprehension. Until we can secure the former we may employ the latter as a means to its accomplishment.

That our author has thus done good service we fully, and gladly, allow, and we rejoice to find a Native student of our Calcutta College, aiding in the propagation of a system of medicine which is calculated to save so many lives. That his work will be of use to those who have studied, or are about to study, in the Agra Medical School we do not doubt, and we wish both them and him every success.

We may add that this work is gracefully dedicated to Dr. Edward Goodeve (one of the Honorary Physicians to

Her Majesty in India) "as an expression of gratitude for the benefits derived from him." Such feelings of kindness and regard between the natives of this country and the English in it, are to be encouraged and applauded and may be held as fit emblems of that good feeling and philanthrophy of which our profession is the admitted type.

On Minor Surgery and Bandaging; for the use of House Surgeons, Dressers, and Junior Practitioners. By CHRISTOPHER HEATH, F.R.C.S., &c., &c. Second Edition—London: CHURCHILL, 1862, 12mo., pp. 228.

IF rapidity of sale be a test of merit then this work of Mr. Heath's must be considered as eminently successful. Somewhat less than a year has elapsed since the first edition appeared, and the author is again called upon for another supply of that which is essential to one class of medical practitioners and is useful to all of them.

Although our duty is, now, to notice the present volume *per se*, yet we are glad to observe that all due care has been exercised to render it an improvement upon its predecessor. For this purpose two short, and very useful, chapters have been added on the "*Immediate treatment of Cases of Poisoning*," and on the "*Mode of reporting Cases.*"

The object of this volume is sufficiently indicated by the title it bears; it is intended as a guide to young practitioners, holding responsible Hospital appointments, as to the treatment of the numerous surgical accidents, and the several emergencies, likely to occur from day to day. The evident intention throughout the book is to supply in a portable form a good knowledge of those practical duties which receive but scant notice at the hands of other authors, whose more comprehensive and advanced works are not of a sufficiently elementary character to comprehend such minor details.

Too little importance is, we think, often attached to the duties of the House Surgeon and Dresser, and, yet, really the completion of the cure of obstinate disease, or the successful finale of a dangerous operation depends chiefly upon the observant care with which the patient is watched long after life has been saved. "To render operations successful

"I would sooner have a good Dresser than a smart Oper-
"ator," were words we heard from a valued friend who combined the two qualities to perfection, and not long ago a distinguished operator while dressing a case of excision of the knee, (the success of which we attributed to his having "dressed" the patient himself) remarked to us, "any man "with hands and eyes could excise the joint, but not one "man in a hundred knows how to make it a cure."

Without doubt there was a want of this book, if it tells to the inexperienced what is to be done and how to do it, and if to this is added the great and rare quality of explaining the reason why, a full comprehension of which can alone fix the rules of practice in the memory of the learner. That Mr. Heath's work does not fail in any of these respects we are happy to add. It is a very comprehensive sketch of the several points likely to arise in daily Hospital practice, and embraces not only the treatment of well marked surgical affections, but also the general principles upon which an Hospital should be conducted.

Much that is of value, in this regard, in the pages before us must necessarily be inapplicable to this country, and many of the details contained in the *Introduction*, concerning the relative position of the several officials, may be passed over with merely a passing commendation. We would rather direct attention to the nature of the arrangement of the contents and the method in which they are treated: and for this purpose will proceed briefly to review the most salient points that require notice.

Adopting the natural selection of subjects which rise to our thoughts according to their importance, the author wisely selects Hæmorrhage for his opening chapter, and we cannot help fully agreeing in the remark that "to arrest hæmorrhage pressure (in its varied forms) is not so fully appreciated as it deserves." We confess that we have seen a good deal of damage done to soft parts by the undue use of styptics and escharotics where pressure skilfully applied would have done far better, and without the loss of substance that so often results from the other methods of procedure. The remarks of the author on the after treatment of cases of this kind are admirable and eminently practical; and no less excellent are the following observations on the constitutional management of them. (p. 12.)

"On the one hand, there is the immediate danger of the patient's

death from exhaustion, and on the other the fear that by over-stimulation the hæmorrhage may be again induced with equally dangerous effect. It is in these cases that opium is of the greatest service. From half to one grain, in frequently repeated doses, will do much to calm the patient's nervous system, and mitigate the injurious effects of loss of blood. Stimulants may be cautiously exhibited provided surgical means have been taken to arrest entirely the flow of blood, but where, from the nature of the injury, that has been impossible, it would be destruction to the patient to excite immediately the action of the heart, and thus destroy Nature's means of arrest. A previously healthy patient will survive a state approaching syncope for many hours, and ultimately make a perfect recovery, while early and judicious stimulation would have hurried him uncontrollably to the grave. Reaction after hæmorrhage is not usually of a violent character, but, if necessary, may be treated by gentle purgation and small doses of digitalis ; tartar emetic can be but rarely required."

The use of the tincture of the Sesquichloride of Iron is, in a subsequent paragraph, justly lauded in the treatment of those whose anœmic diathesis seems to prevent the formation of healthy clots.

The various causes of loss of blood from accident and disease are, next, severally and collectively, noticed; and, under the former head, the mode of application of collodion is detailed, and the substitution for it of gutta percha dissolved in chloroform, is advocated "as it has the advantages of adhering longer, and of not creating so much smarting when applied, as the common preparation." We can confirm this remark from our own experience.

Among the points of diagnosis explained, when considering the sources of bleeding arising from *disease*, we may quote the following passage as of considerable practical importance (p. 23).

"If the blood comes from the kidney, it will be thoroughly mixed with the urine, rendering it smoky if in small quantity, or dark red if more abundant. When the hæmorhage is from the bladder, the first portion of the urine may be pretty clear, and the blood will be clotted and more abundant as the organ contracts. If from the urethra alone, it will be found that the first gush of urine is mixed with blood, but that afterwards it is clear, being again bloody at the last, when possibly a few drops of nearly pure blood may be ejected. Blood from the urethra, if in quantity, will trickle out before any effort at micturition is made."

It would be beyond our present object to do more than

allude to the leading points of interest in these pages, with a view to recommending their perusal to those for whom they are especially intended. To such persons we suggest a careful perusal of the remarks under the head of "Hæmorrhage after surgical operation." Brief, but plain instructions are here given for the arrest of bleeding—they are eminently practical and concise, and well worthy to be remembered.

In a similar manner the appliances used to effect the same purpose are described, and some admirable woodcuts render the text of easy comprehension. To these aids to the reader much is due, and they obviate any difficulty that this inexperience may throw in his way while studying this book. In order to show the care with which this edition has been brought up to modern requirements, we may notice the author's remarks on a recently proposed mode of checking hæmorrhage. Of the value of the suggestion the author fails to give any decided opinion, in which regard we shall follow his example.

"Acupressure, as devised by Professor Simpson, has for its object the arrest of hæmorrhage by means of a needle, which is made to exert pressure upon a bleeding vessel, either by compressing it against a bone or the surrounding tissues. The needle may be applied either on the surface of the wound or at a little distance from it; by transfixing the skin, and wherever it is inserted the extremity must be left at the surface of the body, in order that it may be withdrawn in two or three days, after the vessel has become occluded by natural processes. The advantage of this method is that the irritation caused by a ligature is avoided, the metallic needle producing no such effect; and being withdrawn at so early a date, it offers no impediment to the wound's healing by first intention. At present Surgeons have had but little experience in its use, but it seems possible that acupressure may be substituted in some cases for the ligature, and especially in the amputations, in which it is most easily applied (p. 33.)"

The second chapter, on Wounds, Contusions, Burns, &c., is a useful one, but not characterized by any amount of novelty which would demand our especial notice. But to the young and inexperienced much of practical use is here conveyed, and many of the Principles of Surgery are here insisted upon, which, if remembered, and made to apply to other circumstances, cannot fail to be of material use. We would especially direct attention to the subject of Burns and Scalds as being so calculated to leave permanent traces of their

occurrence. Much has been done of late years to remedy the deformities thence arising—and by no one has more in this direction been accomplished than by Mr. Butcher of Dublin, —but still scarcely a week elapses that we do not see the results of bad surgery in these painful injuries. The rarity of these accidents, in India, among the native population, is notorious, so far as men and young children of both sexes are concerned; but we have recently seen several instances of severe burns occurring to females by the ignition of their dress from open fires placed on the ground.

The only system of treatment, likely to avert the formation of ungainly cicatrices and all the constitutional disturbances likely to follow injuries from the application of dry or moist heat, is thus explained in a manner likely to fix on the mind the one principle held in view, namely, to exclude atmospheric air. Our author says (p. 42—44).

Burns and Scalds.—In superficial burns, i. e., where only the cuticle is destroyed, and in scalds, the readiest application is a mixture of collodion and castor oil (two parts to one), which should be painted with a small brush all over the injured surface; or the gutta-percha collodion may be used pure. When vesicles have been produced, they should be snipped with a sharp pair of scissors, the serum being gently evacuated with a piece of cotton wool, and the collodion mixture applied over them. This mixture may be conveniently kept ready made in a well-stoppered (or better, a capped) bottle, in the surgery, and its application, although painful for the moment, will be found to give immediate relief to the smart of the injury. No other dressing should be put over the collodion, which should be repeated once or twice as it dries. If the injury is quite superficial, the skin will probably cicatrize before the collodion scab drops off; but if too severe for that, healthy granulations will spring up, which are best treated with water dressings. Cotton wool (or what is better and cheaper, the common white cotton wadding, split open) is a favorite and useful application both for burns and scalds. It should be carefully wrapped around the injured part, and maintained in position by bandages. It certainly soothes the pain rapidly, but has the disadvantage of sticking to the raw surface, from which it should be allowed to separate by suppuration, assisted by a poultice, if necessary.

Carron oil (equal parts of lime-water and linseed-oil) is an exceedingly nasty application, though a favourite with many Surgeons. Lint soaked in it is placed over the burnt part, and in badly charred cases it is perhaps as good an application as any, though its offensive odour is a great drawback. In burns of the face a mask of lint dipped in carron oil is sometimes used; but the collodion and

oil is an equally efficacious application, and much pleasanter for the patient. At the London Hospital, where the cases of burns are very numerous, the universal treatment is the application of zinc ointment on lint, fomentations being applied over the dressings for the first few hours.

Without desiring to be critical we cannot consider Mr. Heath's observations on the treatment of bites of rabid animals as either complete or entirely correct. He advocates the use of solid nitrate of silver—or of excision (preceded by the use of chloroform). To the former there is always present the one objection—that it forms an almost impenetrable pellicle which binds down venemous matter that might otherwise be cast off, and that it is never possible for a solid substance to search out the different recesses of a wound as a fluid will do. Strong nitric acid is free from these defects, and is not—(we believe) any more painful than the caustic named. The administration of chloroform would, we fear, be likely to promote the absorption of the poison which was afterwards to be removed or destroyed.

Under the head of "Suspended Animation," the methods of Marshall Hall and Dr. Sylvester are noticed. Of these the latter is preferred, and we think properly.

These subjects, with concussion, compression, and the consideration of the extraction of foreign bodies from the eye, larynx, œsophagus and urethra, form a very complete chapter relating to accidents of comparatively great frequency and some of them requiring prompt and decided treatment. The advice given for their management—and the diagnostic marks of each affection—are well described.

We must pass without more detailed notice the observations upon Retention of Urine, of all kinds, and upon Hernia, as the treatment of these affections is not likely to devolve upon hospital assistants in this country—and because they would demand more lengthened space than we can now devote to them. But they are well written and worthy of all attention. Chapter IV details the treatment of Poisoning by Alcohol, the similarity of the symptoms of this affection and of apoplexy is duly noticed. The author does not allude to the mistakes that have occurred in attributing the insensibility of a man "dead drunk" to concussion or compression of the brain. Of this we saw, several years ago, a good example. A well dressed man walking, apparently steadily, was seen to fall heavily on

his head; and stunned with the blow, was removed to an hospital with a view to his being seen to.

Here, in deep insensibility, the fact of a depression being detected on the parietal bone, induced the belief of his having suffered from fracture of the skull. The Consulting Surgeon was sent for and meanwhile a zealous pupil shaved the patient's head. Shortly afterwards the patient quietly awoke and, upon the discovery of his denuded condition, expressed a very unflattering opinion of the abilities of the volunteer barber, "who did not know when a man had had "drop too much." It turned out that the supposed depression was the result of a congenital malformation.

The more ordinary poisons are next enumerated by the author, and brief and appropriate rules laid down for the management of cases where poisoning is suspected. We need not say that to do this well is by no means easy. We were surprised not to find strychnine mentioned as among those likely to be witnessed in extended Hospital practice: for scarcely a week elapses without cases occurring in which this deadly poison is criminally taken or administered.

The uses of chloroform are adverted to in a few sensible paragraphs—and the almost universal use of it, in all operations, is recommended. But, we observe with pleasure that due caution is given as to the care requisite in using it in certain cases. Of the necessity for this caution our present volume affords some good examples (pp. 330—334).

The following mode of preparing and employing the Plaster of Paris Splint is one that, with certain modifications, we have ourselves employed with advantage, and we found it a ready means of ensuring that perfect quiet of an entire limb which is so essential to the complete union of inert fractures —or in the cases of troublesome and intractable patients.

"PLASTER OF PARIS SPLINT.—The following is another mode of using the plaster so as to form a regular splint for the limb, which can be removed and reapplied at pleasure. The description is that given by Dr. Little of New York.

The limb is first shaved or slightly oiled; a piece of old coarse washed muslin is next selected, of such a size that when folded about four thicknesses it is wide enough to envelope more than half of the circumference of the limb, and long enough to extend from a little below the under surface of the knee to about five inches below the heel. The solution of plaster is then to be prepared. Equal

parts of water and plaster are the best proportions, and the plaster is sprinkled in the water and gradually mixed with it. The cloth having been unfolded, is immersed in the solution and well saturated ; it is then to be quickly folded as before arranged, and laid on a flat surface, such as a board or a table, and smoothed once or twice with the hand in order to remove any irregularities of its surface, and, with the help of an assistant, applied to the posterior surface of the limb. The portion extending below the heel is turned up on the sole of the foot, and the sides folded over the dorsum, and a fold made at the ankle on either side. A bandage is to be applied pretty firmly over all, and the limb is then to be held in a proper position (extension being made if necessary by the Surgeon), until the plaster becomes hard. The time required in preparing the cloth, mixing the plaster, and applying the casing to the limb, need not take more than fifteen minutes. After the plaster is firm, and the bandage removed, we shall have a solid Plaster-of-Paris case partially enveloping the limb, leaving a portion of its anterior surface exposed to view. If any swelling occurs, evaporating lotions can be applied to the exposed surface, and we can always easily determine the relation of the fractured ends. If necessary, an anterior splint, made of the same material, can be applied, and then both bound together with adhesive plaster, one inch wide, or bands of any kind, may be applied around the casing, and will serve to keep it firmly adjusted to the limb. Thus applied, we have a most beautiful splint, partially enveloping the limb, making equal pressure, light, and allowing the patient to change his position in bed, or to sit up in a chair, or go about on crutches ; and a splint which can be easily made in any place where plaster is to be had."

The charm of the whole book is its strictly practical character—there is little, perhaps, of novelty—but there is a good deal of every-day work familiarly explained and succinctly put before the student. The practitioner will, too, find in it many useful hints of modern modes of treatment tending to the patient's more speedy convalescence and his own greater satisfaction.

Before ending our notice of this book we would strongly recommend it to the medical subordinates of the Madras Army as likely to be of infinite service to them not only as students—or assistants—in our large hospitals—but as calculated to be a sound and useful guide to them when placed in independent charges.

We cannot conclude our remarks without giving due praise to the artist, Mr. Swain of Bouverie street—who has reproduced in an admirable manner some original photographs taken for this work.

Cooper's Dictionary of Practical Surgery and Encyclopædia of Surgical Science. New Ed., brought down to the present time. By SAMUEL LANE, Surgeon to St. Mary's, and Consulting Surgeon to the Lock Hospitals: Lecturer on Surgery at St. Mary's Hospital: assisted by various eminent Surgeons. (In two vols.) Vol. I. London: LONGMAN GREEN, LONGMAN AND ROBERTS. 1861; 8vo., pp. 1085.

WE have, both in the present and in former numbers of this journal, devoted so much space to the consideration of special, or general works on surgical practice, that our notice of the volumes above named must be of the most brief description. Nor is this to be regretted in reviewing a book so familiar to all and so universally esteemed as one of the most valuable ever published. The history of this work is familiar to all, and the seniors of our profession can recall the gradual and steady progress that it made while, for more than quarter of a century, it grew to perfection under the laborious efforts of the master mind which first designed, and always superintended, this his favorite work. The busy brain whose toil was here exhibited, is now at rest for ever—the gifted author has passed from amongst us, and, "after life's fitful fever sleeps well."

In no way could a higher tribute be paid to his memory, (and who can fail to revere it?) than by a careful reproduction of his work, brought down to the latest date, and relieved of some of those errors which could only be corrected by the advancing knowledge of later years.

That this should be done well, the varied experience of many minds was needed—and while we warmly congratulate and compliment Mr. Lane on the ability with which he has performed his task, yet, we are glad to observe, that he has associated with himself writers of known ability and extended experience in the various departments of surgical science.

The plan of the original editions is so universally known that we can perhaps best convey to our readers a clear understanding as to the object, and aim, of the present one by reprinting (almost in extenso) the following admirable Preface—simply premising that the promises therein held forth

are fulfilled carefully, and that the work will, when completed, be, without doubt, as popular as its predecessors have deservedly been.

Mr. Lane says :—

"The last edition of COOPER'S SURGICAL DICTIONARY appeared under the auspices of its laborious and talented author, who devoted with unprecedented ardour, a whole life to the production and perfection of his favourite work. His great abilities and untiring energy enabled him, in seven successive editions, spread over a period of nine-and-twenty years, to present to the world an epitome of surgical science unrivalled, as the production of one man, for its accuracy, for its great research, and for the amount of information it has been the means of accumulating and disseminating for the last half century, amongst surgeons in this country, and throughout the civilized world. In the preface to his seventh and last edition, Mr. Cooper thus writes of himself and his labours :—

The utility of this Dictionary to students and all classes of medical practitioners, has obtained for it in this country a larger share of patronage than perhaps was ever conferred upon any other book of Surgery ; while its translation into the French, German, and Italian languages, and several republications of it in America, may be taken as proofs of its being deemed worthy of considerable notice in various parts of the world.

In preparing this edition, which comprehends an account of all the principal modern improvements in Surgery, I have conscientiously endeavoured to deal fairly and impartially with every individual whose name I have had occasion to mention, or whose suggestions form subject of consideration, in the ensuing pages. My aim has been Truth, wherever I could find her ; and in every situation where any glimpse of her beautiful figure presented itself, I have ardently courted her, regardless of the name, school, or country on which she might deign to shed her glory. By steadily adhering to this principle ; by zealously marking what the book of Nature and the field of experience unfolded ; by renouncing all obsequious submission to every other kind of authority ; and by taking the liberty of sometimes thinking and judging for myself ; I trust that the most likely plan has been adopted of maintaining the character of this book, and raising my own reputation.'

Mr. Cooper adds the following quotation from the preface of Dr. Reese's American edition of the Dictionary :—

As in every species of human science, our highest attainments are but an approximation towards perfection ; so in the science of Surgery, each succeeding year demonstrates that all that is known of the principles or practice of our art, is but the prelude to still higher exhibitions of science and skill, alike honourable to the pro-

fession, and valuable to the cause of humanity. To condense and arrange all the novel and interesting facts which clinical experience is furnishing, and upon which alone the edifice of true science can be erected, is a task worthy of the immense labour which Mr. Cooper has bestowed on each succeeding reprint of Dictionary, and one to which he has proved himself entirely adequate. The extensive and multiplied resources to which he has access, furnish him with facilities possessed by few; and in availing himself of these, he has exhibited an industry, and, for the most part, an impartiality, worthy of all praise.

The task that has devolved upon the present Editor is to embody in the Eighth Edition of the work thus characterised by its illustrious author, all that has been subsequently achieved in the art and science of Surgery. Since the names of Liebig, Mulder, Robin, and Verdeil have appeared amongst us, chemistry, especially animal chemistry, has not only made rapid strides, but, as regards its influence on the study of morbid products of either a solid or fluid nature, may be considered almost a new science. The microscope, in the hands of Schwann and Schleiden, has led to the discovery of cell development, unveiling to us the important part played by the nucleated cell in the vital functions of secretion and excretion, and the further knowledge that the blood itself is composed of nucleated cells, movable in the liquor sanguinis, and conveyed by the circulation to every organ and tissue in the body. The vast improvements in histological and pathological anatomy, introduced by Rokitansky, Paget, and Virchow, have entirely altered our notions of healthy and morbid growths. The discovery of the laws of endosmosis and exosmosis, by Durtrochet, added to our improved knowledge of the peripheral terminations of the whole vascular system, have led to the subversion of the Hunterian doctrine of absorption and deposition by the open mouths of the absorbents and arteries. The gradual introduction of humoral pathology, and the equally gradual extinction of pure solidism; and lastly, the new views in the treatment of inflammatory diseases by stimulants, as advocated by the late Dr. Todd and others, perhaps too readily received and adopted by many of the rising generation of medical men, to the exclusion of the heroic remedies of repeated bleedings and salivations,—hitherto too zealously and too indiscriminately had recourse to—have all had a powerful influence in modifying the opinions held by surgeons of the present day with regard to the nature and treatment of most surgical diseases.

The necessity that these new lights should be made to pervade more or less the pages of this dictionary, and that the prolific and teeming professional literature of the last quarter of a century should be consulted on every branch of Surgery, rendered it physically impossible that the Editor should himself revise each separate article. He has accordingly associated with him in his editorial

labours many eminent and able writers, for the most part already distinguished in the department of Surgery which they have undertaken, as will be at once recognised in the following list of subjects and contributors :—

Mr. J. Adams.....	Head, Injuries of.
Mr. W. Adams.....	Orthopædic Surgery.
Mr. Ancell.....	Articles on Blood; Tuberculosis.
Dr. Bader.....	Ophthalmic Surgery.
Mr. Busk.....	Scurvy.
Mr. Blenkins.....	Gun-shot Wounds.
Mr. White Cooper...	Cataract.
Mr. Coulson.....	Lithotomy and Lithotrity.
Mr. Druitt	Inflammation and its Terminations.
Mr. Erichsen.....	Aneurism.
Mr. Fergusson.....	Staphyloraphe.
Dr. Hanfield Jones	Cancer and Malignant Diseases.
Mr. E. Hart.....	Hydrophobia; Tetanus.
Mr. J. R. Lane.....	Amputation; Fractures and Dislocations; Diseases of the Rectum.
Dr. McLeod.....	Varix.
Mr. Spencer Smith..	Bones, Diseases of.
Dr. Snow.....	Anæsthesia.
Dr. Tyler Smith.....	Articles on Obstetric Surgery.
Mr. H. Thompson....	Urethral and Prostatic Diseases.
Mr. Thos. Wakley..	Joints, Excision of; Joints, Diseases of; Hydrocele, &c.
Mr. Spencer Wells.	Plastic Surgery; Burns, &c.
Mr. Erasmus Wilson	Skin, Diseases of.
Mr. Ure	Caustics; Mamma, Diseases of.

The pathology of the blood will be found a very important addition which has contributed to augment the pages of the work. This subject in its entirety has been undertaken by Mr. Ancell, whose competency to the task is well established by the publication in the year 1841-42 of his "Lectures on the Physiology and Pathology of the Blood," which, with the contemporaneous writings of Andral, Stevens, Piorry, Copland, and others, unquestionably influenced the progress of Medical and Surgical Science and the direction it subsequently took. At the period of the publication of the last edition, but slight account had been taken by surgeons of the blood as a vital constituent of the animal frame, or the seat of either the material elements, or the dynamic actions which enter into morbid processes. But at the present day, in every department of surgical practice, the question of the actual state of the blood must be entertained before any case can be fully compassed or rational indications of treatment, whether by operation or otherwise, can be laid down. Under these circumstances, the duty of the editor would appear to be to present to the surgical practitioner and the student a fair summary of all that is known on the subject. The accomplishment of this has been attempted in the Articles—*Blood, Pathology of—Cholæmia—Hydræmia—Hyperinosis—Hypi-*

nosis—Heterochymeusis—Hyperæmia—Oxalæmia—Necræmia—Pyæmia—Toxæmia—Spanæmia, Urœmia, &c. Some of the articles have been through the press for a considerable period, but the writer has contrived so to arrange the materials that, under the various headings above specified, will be found comprised a sufficiently complete view of the actual state of our knowledge of the pathology of the blood.

The plan adopted in conducting the present edition through the press has been, to retain as much as possible of the original matter, whether historical or strictly professional; to erase only that which by lapse of time had become obsolete, or which the accumulated experience and the advance of the collateral sciences had shown to be at variance with the improved knowledge of the day. The addition of new matter has been restricted, as much as possible, to the space rendered available by the erasures, in order to keep the work within the compass of a dictionary of convenient reference. In many instances this has not been found possible, and a considerable extension of certain articles has been unavoidable. A few have been entirely re-written. New ones have also of necessity been added. Orthopædic surgery—Ovariotomy—Excision of Joints—the treatment of Vesicovaginal Fistula and of Ruptured Perinæum, &c.—have assumed the position of new branches of Surgery since the last edition of this Dictionary, and have consequently demanded much additional space. The result has been, that with every desire and every effort to exceed as little as possible the bulk of the last edition, the present—notwithstanding the space gained by the numerous erasures, which have been unsparingly had recourse to—will contain at least 500 additional pages of new matter.

The reader will at once understand who is responsible for the revision or authorship of any article by observing the presence or absence of a name at the end of the article. In the latter instance the Editor himself is answerable; in the former the writer whose name is attached. Throughout the work the new matter is distinguished from the original of Mr. Cooper by being enclosed in brackets; that which has been erased could not be indicated.

The unavoidable increase in bulk of the present edition has induced the Publishers to divide the work into two volumes. The First is now presented to the professional public. The Editor, however imperfectly he may have thus far performed his task, has endeavoured, to the best of his abilities, to follow, *haud passibus æquis*, in the footsteps of Mr. Cooper; actuated by similar aspirations for the advancement of our noble and beneficent science, his aim has been to carry out the declared intentions of the author with the same independence of thought, the same devotion to truth wherever found, and to adopt the same spirit of fairness and impartiality in recording the discoveries and opinions of cotemporary surgeons."

To this we have only to add that in all these wishes and intentions the present Editor, and his *collaborateurs*, have been eminently successful, and that we cannot fail to consider that their labours have been well and judiciously expended.

We may add one word—the type, size, and style of the older copies of the work, are all reproduced: and, but for the fact that we miss the old familiar name in its accustomed place upon the title page, we might easily mistake it for a former edition. But due prominence has been given to the founder of the work—and "Cooper's Surgical Dictionary" will, even in the future, be a "household word" to all students and practitioners.

A second volume, with a copious appendix embodying the latest discoveries and improvements, will be published as speedily as possible.

We shall avail ourselves of that opportunity to glance over, in brief review, some of the articles regarding surgical affections of a tropical character.

Parturition without Pain. By JAMES TOWNLEY, M.R.C.P. ED. F.R.C.S.E., &c. London: J. W. DAVIES, 8vo., 1862, pp. 56.

WE confess that there are few moments of professional life more thoroughly enjoyable, in their way, than those in which the Physician can turn his steps from the investigation of painful and acute disease to the pleasing task of administering *placebo's* to cure the imaginary evils of some ancient and garrulous female hypochondriac. There is a pleasant spice of professional lore and of personal experience, with sometimes a flavouring of scandal (if the patient be unmarried) that is highly refreshing to the wearied mind.

Medicine can be made so easily familiar to patients of the indicated sex, that we do not wonder to find them loquacious as to their own ailments and those of their female friends; they revel in descriptions of headach—display an ingenuity in multiplying the protean symptoms of dyspepsia—and exult, apparently, in neuralgic affections, to an extent that ought to render *Pulvermacher's chains*, and *Elec-*

tro-magnetic machines, a safe investment for the young and rising Medical practitioner.

But above all other topics to excite their eloquence is the "curse pronounced upon Woman"—which indeed becomes a positive blessing to their female friends and neighbours. Witness the excitement that such events induce, not in their actual occurrence alone, but, by anticipation for months before. The smiles and nods and hints that intimate to the visitor that dear *Mrs. So and So* "is expecting" cease not till the first instalment of caudle is prepared, and the "happy event" is duly announced by the morning papers.

Prominent among the subsequent topics of discussion we *then* find the enquiry as to how the dear invalid got through her troubles and precedents, and authorities are freely quoted in illustration of the peculiar features of each individual case. The *Doctor* now comes under the investigating clique of female gossips, and is praised or blamed with an independence of the Law of Libel that is a pleasing indication of the public motives by which alone the conclave is influenced.

These latter topics are now however virtually ended. Pain is about to be abolished, and every one of "Dr. Townley's Ladies" (we quote the words of one of them) appears prepared to depose that all inconvenience in this respect can be avoided by "his most beautiful plan of treatment."—(vide p. 24).

The volume descriptive of this, and bearing the attractive title prefixed to this article, is modest in size—56 pages of good paper do not make any great bulk even when bound in cloth. Its cost is, we believe, half a crown, its value is actually incalculable. It purports to show how pain may be abolished by the inhalation of an anodyne mixture containing "alcohol, two ounces; one drachm of aromatic tincture; with sufficient chloroform added short of the production of a turbid state of the fluid." (p. 8.) We are left a little in the dark as to the actual quantity of chloroform employed, but much regret must be felt on this account as the chloroform must really be the test by which the value of the medicine can be estimated: and we would act much more correctly if we regulated the extent of inhalation to be recommended by considering *this* ingredient alone. The precious compound used by our author is in-

tended "to deaden sensation without interfering with consciousness"—this object is not new nor is its special applicability to labour cases now discovered for the first time.

But our author was apparently of another opinion and fired with a new-born zeal proposed to carry out the desired indication, by constructing an inhaler; by preparing a new anodyne; and by dictating a mode of administering the vapour. His suggestions as to, and descriptions of, the foregoing, and some curious hints as to the regimen to be observed by a woman during labour, occupy six pages of the work, but do not require any detailed notice. But we may remark that "a tea-spoonful of brandy in a cup of tea"—or "a glass of wine and a little cake, from time to time," is a line of practice that, if steadily pursued, would certainly result in unconsciousness of pain, (even independant of the anodyne inhalation,) in most protracted cases.

Page 11 is a remarkable one: in it he proposes to explain when the agent should be administered. To this, the only real question of importance, he gives two replies—first, that *he* knows when to give it—and, secondly, that "any competent observer" can obtain similar proficiency after a little practice. This is neither very satisfactory nor highly useful to the reader, and not just the sort of manner in which scientific matters should be treated. The object of the author is, however, not to treat the matter scientifically, but to publish a work apparently professional, though really an appeal to the "Ladies" of Kennington and its vicinity.

This serious charge is founded on our perusal of the book. It has a title page, an *Advertisement* (sic), 52 pages of matter and two blank pages. Of these 52, 6 are descriptive of his *inventions;* 1 does not tell us how to use them; 4 give his own summary of his practice, and 39 are occupied with letters from grateful patients. Immediately prefixed to these latter curious productions is a brief Introduction to them, and this contains a piece of professional lore—the only one in the book. The gifted and learned author says (p. 16).

"It is generally admitted that the suffering of first labours equals if not surpasses that of subsequent ones."

He then proceeds to state that of the cases selected for publication six were *primiparæ*. Of course he does not use this word. Kennington ladies do not read Latin.

And now we feel that the dry work is over and we turn to the Testimonials of the patients. They are all anonymous, but they assign their local habitation clearly, and they would appear to be very careful to subscribe their letters as to "Dr. Townley."

Anonyma No. 1 dates from "Providence Place," and clearly regards the author as a special agent of the former of these words—and she thanks him for his "most beautiful method."

"Oxford Terrace" bears testimony to the "marvellous effects of his process." (p. 21.)

"Roupell Park" favors the public (for these letters are clearly written for publication) with a brief autobiographical account of her former labours, and, after an interesting account of *her* experience of *parturition without pain*, winds up an eloquent epistle with praise of "his marvellous process." (p. 23.)

"Clapham" reverts to the language of Anonyma No. 1, and describes it as a "most beautiful plan of treatment," and with a gratitude that is worthy of all imitation: she, in company with her husband, rejoices to think of it as ready for her "at any future time." (p. 26.)

"Epsom," writing from her own home, (having we suppose had lodgings in Kennington, just as people go to Edinburgh to be near Professor Simpson) gives us a pretty account of seven confinements with a concluding para. about future events.

"Camberwell New-road," who winds up with a distinct reference to Providence and Dr. Townley, describes how she felt as if the vapour "ran down her back."

"Kennington" who appears to be a companion of Dr. Townley, as she "has seen him give it in two other cases," upon one of which she pronounces a professional opinion, alludes to his "beautiful process" and allows her letter to be shown to any one—or enquirers (or scoffers) may be referred to her. This would appear to the habit of some of Dr. Townley's patients, for "18th February 1862" who refers to them as "*his ladies*" will admit visitors and detail to them how she did not feel her "*great baby* being born," and how Dr. Townley "called it a *terrific bout.*" But not content with this she "speaks of him and his wonderful discovery whenever she gets the opportunity."

We hope that her fee was immediately returned, and that she will be dealt with equally liberally when she "has his valuable assistance again" which she seems to anticipate.

And so on through a set of letters, highly improbable, and only possible, if written at the direct solicitation of the author.

We never heard of him before, and shall probably never hear of him again; but we desire to record our protest against this book as the type of the worst form of puffing. Written for the profession ostensibly—largely advertised in the Lancet and papers of this class—issued by a Medical publisher of repute—it is found to be a compound of self-laudation, egotism and absurdity that would bring disgrace on any professional book. Its object is plain enough, and we can only say that we sincerely hope it has not been attained.

We have already alluded to the fact that in lieu of the usual Preface we are favoured with an *Advertisement.* We only regret that the same prefix was not put upon the title page, had it been so we would have been spared the trouble of perusing this book.

A System of Surgery, Theoretical and Practical, in Treatises, by various Authors. Edited by T. HOLMES, M.A. Cantab, Assistant Surgeon to St. George's Hospital and to the Hospital for Sick Children. In Four Volumes. Vol. II. *Local Injuries. Disease of the Eye.* London: PARKER AND SON, 1861, pp. 895.

IN our notice of the first volume of this work we extracted from the preface a statement of the plan upon which Mr. Holmes purposed to conduct his System of Surgery, and we now observe that it has been thought desirable to depart from that plan so far as to place the essay on Diseases of the Eye before those which treat of the Principles of Operative Surgery. Although we consider that, generally speaking, it is better for an editor to submit to an inconvenience than to depart from a deliberately formed and announced plan, yet, in the present instance, there need be no cavilling, as it is almost a matter of indifference in what part of the work the Essay on Diseases of the Eye is placed.

We stated that in our opinion this work would mark an era in Surgical literature, and this opinion is strengthened upon a perusal of the volume before us. The peculiarity of the work is its entirely modern character; it is not, and does not profess to be, a réchauffé of all that has been written and believed, but each essay appears to aim at being a faithful description of what is now known and what is now believed. We took exception to the arrangement which had been followed in some of the treatises, but we feel bound to say that Mr. Holmes appears to have made a happy selection of contributors, well qualified for authorship upon the particular subjects which they have chosen to handle.

The opening essay in this volume concludes the subject of General Surgical Pathology. It is an account of *Gun-shot Wounds* and is from the pen of Professor Longmore. In his introductory remarks, under the heading *History*, Mr. Longmore gives a slight review of Military Surgery, in which he observes that, to the Army Surgeon, the interest excited by the alterations now being made in the qualities of fire-arms is chiefly confined to the degree of injury and destruction inflicted by them as compared with weapons of a less perfect kind. After alluding to the irrational mode of practice which resulted from the erroneous views of the earlier Surgeons that gun-shot wounds were poisoned wounds, he remarks :—

"It is satisfactory to know, that though Continental Surgeons have written more voluminously on the subject of gun-shot wounds, the older English Military Surgeons and writers stand forth conspicuously in leading the way to a more practical knowledge of their nature and proper treatment."

He pays a just tribute to the zeal and sagacity of John Hunter, but is forced to confess that almost every improvement in the treatment of gun-shot wounds, has been derived rather from the practical experience gained in military campaigns than from the discussions of men of the highest mental attainments. He quotes Guthrie's remark that the surgical principles and practice which prevailed at the commencement of the Peninsular war, were superseded on almost all important points at its conclusion; and then observes :—

"The still more recent military operations in Algeria, in Schleswig-Holstein, in the Crimea, and in India, have afforded the oppor-

tunity of testing practically the applicability to army practice of some of the great improvements which have been accomplished in the civil practice of Surgery in Europe since the termination of the war in 1815. Among these may be particularly enumerated, the avoidance of amputation of limbs, by recourse to excision of joints; resections of injured portions of the shafts of the long bones; mitigated amputations, by removal only of those terminal portions of the extremities which had been destroyed by the original injury; and the practice, generally, of what has been styled Conservative Surgery."

We may here remark that Mr. Longmore writes in a very pleasing manner. His essay is systematically arranged, his diction lucid and explicit, concise but full. Gun-shot wounds are described as influenced by the *form and nature of the missile*, the *degree of its velocity*, and the *seat of injury*. There are not only *direct* gun-shot wounds, but *indirect* ones, such as are inflicted by miscellaneous objects which may happen to come in contact with the solid ball, or shell, in its course. The several varieties of ball and shell are described, and, with reference to the largest kind of balls, Mr. Longmore says that the form offers little subject for consideration. The momentum being granted, the weight is the important ingredient in the production of injury. But should the use of cylindro-conoidal balls, or Whitworth's bolts applied to cannon, become general, the Surgeon must look for an increase in the number of *direct* wounds from greater power and precision of fire, and a less number of *indirect* injuries, as these missiles neither ricochet, nor roll as spent balls, as spherical shot are accustomed to do.

In respect of musket-shot the form has great influence. We know not what a round musket-ball would effect if propelled with the same amount of force as recent improvements in fire-arms have given to balls furnished with a conical vertex. But independent of the increased momentum which has been communicated to them, the cylindro-conoidal balls possess the mechanical characteristic of the wedge, and thus their power of penetration is vastly increased:—

"Thus, supposing one of the old musket-bullets to strike a limb at 80 yards, and an Enfield rifle conical bullet of the same weight at 800 yards, the rate of velocity being similar in each case, the injury from the latter may be expected to be considerably greater than that from the former, on account of its shape. The wedge-like quality of the conical bullet is rendered peculiarly obvious on its being driven into the shafts of the long bones of the ex-

tremities. The solid osseous textures of which the cylindrical portion of these bones is composed, is split up into fragments, having mainly a direction parallel with the central cavity; and fissures not unfrequently extend from the seat of injury to their terminations in the joints, of which they form component parts. Such results were scarcely ever noticed from the impulse of round balls. The bone might be comminuted, but the fragments were of a more cuboid shape, and the long fissuring did not occur. It has been stated, that the screw motion impressed on the ball by the rifling of the musket contributes to its increased power of injury on bone; but its shape, combined with its momentum, seems sufficient to explain the severity of its effects above those of the round bullet. Another result of the tapering form of the conical bullet is, that it is less exposed in its course through soft parts of the body to opposition from tendons, and other long and elastic structures, so frequently noticed to stay the progress of spherical shots. If not dividing them by direct impingement, it readily turns them aside, and it is partly due to this pointed shape, therefore, as well as to increased force, that, as will be noticed hereafter, the lodgment of balls is now so rare in comparison with the experience of former wars."

The effects of *indirect* missiles are next discussed. They are often to the sight more fearful, but in reality less grave, than injuries from *direct* projectiles. Occasionally they produce simple fractures, sometimes much comminuted, whilst direct missiles produce compound fractures. The constitutional shock is, as a general rule, less than in direct gun-shot wounds.

The *degree of velocity* of the missile is then considered.

"In a table showing the velocities of certain moving bodies, published in 1851, the common musket bullet is set down as moving at the rate of 850 miles per hour, the rifle-ball of that time at 1,000, the 24 pound cannon-ball at 1,600 miles per hour. But the musket-ball then could not be depended on to hit an object beyond 80 yards, the rifle 200 to 250 yards, while the present Enfield rifle is sighted to 900 yards, and the short Enfield to 1,100 yards. * * A musket-ball that would be arrested half-way through a limb, is now replaced by a ball which, at like distance from the point of discharge, will pass through several bodies in succession."

This increased velocity, or greater force, exhibits its effects in two ways; locally, by greater destruction of the tissues; constitutionally, by greater disturbance to nerve-force.

The power of penetration is also influenced by the density of the projectile. Thus, with reference to bullets manufactured by mechanical pressure, the projectiles and charges

being of the same weight, when lead is used, the penetration at 800 yards is one-third greater with the Whitworth than with the Enfield rifle, but when the lead is mixed with tin, and a less yielding projectile is thus formed, the penetration is as 17 to 4 at 800 yards.

The increased velocity, together with the more rectilinear path in which modern projectiles move, has another remarkable effect, viz., a vast increase in the *number of wounds in battle.* And not only will the modern Military Surgeon find a greater number of wounded, compared with the experience of former wars, placed under his charge, but he may not unfrequently find several bullet wounds in the same individual. Colonel Wilford has stated that 80,000 rounds of ball-cartridge were fired from the old musket in one day in Caffraria, and only 25 Caffres were known to be hit, while at Cawnpore, one Company of solidiers, armed with the Enfield rifle, brought down 69 out of a body of horsemen by whom they were attacked, at one discharge. At the battle of Salamanca only one ball in 3,000 fired by the British took effect, whilst at Solferino, in twenty-four hours, 11,500 French, 5,300 Sardinians, and 21,000 Austrians, were laid *hors de combat.*

We think a very important lesson is to be learnt from this fact of the greater number of wounds in modern warfare—a lesson that cannot be too strongly urged upon our rulers; namely, that the amount of surgical attendance that is required in modern engagements can in no way be estimated by that which was found sufficient in former times. It is very distressing to read that at Solferino—

"The Surgeons had no time to attend to the first necessities of a great proportion of the wounded. A multitude of these unfortunates were hastily conveyed to the little village of Castiglione, and had to wait hours, many even days, before their wounds could be dressed. To relieve thirst, and apply wet compresses of linen to ease the pain of the wounds, by calling into service the people of the neighbourhood, was as much as could be done to a great number, for the first day or two, on account of the great number of wounds inflicted by the new weapons."

If such are to be the results of the improvements in arms, what a serious responsibility rests upon the War Department to see that ample surgical aid and appliances are provided for our troops. Nothing short of a well organised Ambulance Corps, the members of which should be constant-

ly exercised at their duties (not neglecting very frequent attendance in the Surgical wards of a hospital), can possibly afford the least hope of any mitigation, in any future campaign, of such sufferings as those above detailed. We know that there is an Ambulance Corps in existence in connexion with our army, but we are not acquainted with the details of its formation, though we make no doubt that the experience of such men as Professor Longmore, Professor Parkes, our friend Professor Maclean, and others, has been brought to bear in its organization.

We do not intend to follow Mr. Longmore throughout his treatise. We can assure our readers that a perusal of his article will amply repay them. It proceeds in a systematic manner to treat of the varietes of gun-shot wounds under the heads of spent balls; lodgment of balls and missiles, foreign bodies, &c.; internal wounds without external marks; varieties depending on the seat of injury, and on the varying course of balls. The symptoms of gun-shot wounds are next detailed; the appearances of the wounds produced by various kinds of projectiles; the pain; the shock; and primary hæmorrhage. On the latter subject Mr. Longmore says:—

"Surgeons after an action are usually too much occupied with the urgent necessities of the living wounded to spare time for examining the wounds of the dead, who are mostly buried on the field where they fall. Thus most Surgeons speak of primary hæmorrhage being exceedingly rare, more rare perhaps than it actually is. M. Baudens, referring to his service in Algeria, has remarked that he has often found on the field of battle wounded soldiers who had died of primary hæmorrhage."

The primary hæmorrhage, in those cases which actually come under the Surgeon's care, is small in quantity and of short duration. Musket bullets rarely cut through arteries, the vessels slip aside and escape division. And when a part of the body is carried away by round shot or shell the arteries retract and become plugged, as happens when a limb is torn off by machinery. It is in wounds inflicted by pieces of shell that the greater danger of hæmorrhage occurs, for their sharp edges, less velocity, and the oblique direction in which their fragments usually impinge, render arteries more liable to be wounded by them without complete transverse section of their coats.

The prognosis and treatment of gun-shot wounds in gene-

ral follows. Though there are necessarily certain specialities connected with the subject, yet great stress is laid upon the applicability of the principles of general surgery to the treatment of these injuries.

One of the earliest rules for examining a gun-shot wound is to place the patient, as nearly as can be ascertained, in a position similar to that in which he was, in relation to the missile, at the time of being struck by it. The examination in every instance will be facilitated by attention to this precept. The finger of the Surgeon is the most appropriate of all instruments for conducting the examination of a gun-shot wound. The presence of a foreign body is more obvious to the finger direct than through the agency of any metallic instrument. Should the wound be deep, the examination may be facilitated by pressing the soft parts from an opposite direction towards the finger-end. Enlargement of the wound is very seldom necessary; it may be required when difficulty is experienced in extracting an extraneous body, or for the purpose of securing a wounded artery, or to replace protruded viscera, as in wounds of the abdomen; but as a prophylactic measure, as formerly employed, it cannot be needed; the practice was founded in the erroneous conception, previously alluded to, of the poisoned character of a gun-shot wound.

For the extraction of a ball, Coxeter's instrument, consisting of a scoop for holding, and a central pin for fixing, the bullet, is considered the best, from the comparative limited space required for its action. Two bladed instruments, or scoops with hinge action, dilate the track of the wound injuriously. Lodged bodies should always be removed if possible, even if impacted in bone. But if the site of lodgment be not ascertained the search should not be persevered in to the distress of the patient. And if extensive incisions are required, or there is danger of wounding important organs, the attempts at extraction must be abandoned.

"When John Hunter wrote on Gun-shot wounds, he remarks, the practice of searching after a ball, broken bones, or any other extraneous bodies, had been in a great measure given up, from experience of the little harm caused by them when at rest, and not in a vital part; and he himself advises, even when a ball can be felt beneath skin that is sound, that it should be let alone, chiefly on the ground that two wounds are more objectionable than one, and that the extent of inflamed surface is proportionably increased by incision. More extensive experience has, however, shown, that not only

is the risk of subsequent ill results greater in those cases where foreign bodies remain lodged than when they have been cut out, but also that the advantages of a second opening for the escape of the necessary sloughs and discharges, greatly preponderate over the disadvantages connected with it, as regards the additional extent of injured surface. The advantage also of the satisfaction to the mind of a patient from whom a ball has been removed must not be overlooked; for men suffering from gun-shot wounds are invariably rendered uneasy by a vague apprehension of danger, for some time after the injury, if the missile has remained undiscovered."

The after-treatment must be conducted on ordinary surgical principles. The very greatest attention must be paid to cleanliness, especially in tropical climates, or where many wounded are congregated; for flies propagate, under these circumstances, with wonderful rapidity, and the utmost care is required to prevent the generation of larvæ in the orifices of gun-shot wounds, especially during separation of sloughs. Cloths dipped in weak solutions of creasote or disinfecting fluids, laid over the wound, should always be used when insects abound.

The constitutional treatment should be simple. Attention to the excretory functions, and support of the general strength, are chiefly to be considered. Bleeding is never practised now by English Surgeons. Pure fresh air is of the utmost importance.

"In French practice, the administration of a chalybeate tincture,* as a tonic, or diluted as an injection, in wounds threatening to assume an unhealthy character, is very highly praised. It is stated, that under the conjoined employment of this remedy internally and externally, in wounds of a pallid unhealthy aspect, accompanied by nervous irritability and symptoms of approaching pyæmia, the granulations have resumed a red and healthy appearance, and the general state of health become rapidly favourable."

From our own experience, in civil practice, we can speak very highly of this remedy, both as a constitutional and local stimulus under circumstances corresponding to those above mentioned.

Mr. Longmore proceeds to treat of *Gun-shot wounds in special regions of the body.* We shall simply state the arrangement that has been followed, and must refer our readers to the admirable essay itself for any further infor-

* *Perchlorure de fer*, 30 drops, two or three times daily as a tonic, and diluted with six parts of water as an injection.

mation. First, we have gun-shot wounds of the head ; viz., simple wounds of the scalp and pericranium ; wounds complicated with fracture, but without depression on the cerebrum ; wounds complicated with fracture, and depression on the cerebrum ; and, with penetration of the cerebrum. Secondly, gun-shot wounds of the spine ; thirdly, of the face ; fourthly, of the chest, non-penetrating, penetrating ; fifthly, of the neck ; sixthly, of the abdomen, non-penetrating, penetrating ; and, lastly, of the extremities. The question of amputation is entered upon, and it is remarked that Military Surgeons, whether acting at sea or on land, have practically determined the advantages of *primary* over *secondary* amputation. Some short but authoritative remarks upon secondary hæmorrhage, wounds of nerves, tetanus, anæsthesia in gun-shot wounds, and the after-usefulness of wounded soldiers, complete this very excellent treatise.

The second essay in this volume is on *Injuries of the Head,* and is contributed by Mr. Prescott Hewett. Mr. Holmes could scarcely have selected an author upon this subject better qualified for the task. Those who remember the admirable lectures which Mr. Hewett delivered at the College of Surgeons, will be fully prepared to admit that he must be regarded as one of the first living authorities upon Injuries of the Head. Such persons will easily recognise that this essay is in reality an epitome of those lectures. It is very nicely written ; there is much freshness and vigour of style, and, altogether, a perusal of it leaves the impression that we have made the acquaintance of one who thoroughly understands the subject he has taken up, who has formed, and does not hesitate to give expression to, decided opinions, and who has a facility in laying his views before his readers in a clear, attractive manner.

The treatise, which occupies just one hundred pages, is well arranged. Were we inclined to cavil, we should say that wounds of the scalp, and contusion of the bone, are rather cursorily disposed of ; but nevertheless there is nothing stated to which any exception can be taken. We must give an extract from this part of the essay, which will at once show the style in which Mr. Hewett writes, the clearness of his views and the legitimacy of his practice.

"It is no doubt right, as soon as inflammatory symptoms make

their appearance after a blow on the head, to have recourse at once to antiphlogistic remedies; but the prospect of the benefit likely to be derived from our treatment must depend upon the cause of the inflammation. In inflammation dependent upon concussion of the brain, antiphlogistic remedies will, in the great majority of cases, be of very great use; but in inflammation beginning in the diploë and spreading to the dura mater, they will be of little or no avail; and hence the reason why we so commonly find these cases running their course, notwithstanding blood-letting, mercury, &c.

The increase of the symptoms leads to the question of trephining in such cases.

Trephining for matter between the bone and the dura mater appears, in Pott's hands, to have been a most successful operation. Blow on the head—subsequent secession of the pericranium—pain in the head—fever—rigors—application of the trephine—evacuation of matter—cured. Such is the history of the majority—five out of eight—of the cases in which Pott applied the trephine. But no such success has attended the practice of other surgeons. On the one hand, the dura mater has been found, over and over again, perfectly sound in cases where the trephine has been applied for precisely similar symptoms; and, on the other hand, although matter may have been found between the bone and the dura mater, the patient has nevertheless died. I have repeatedly seen the trephine applied under such circumstances, and matter evacuated, but without any permanent benefit. Indeed, the successful issue of a case of trephining for matter between the bone and the dura mater is, I believe, all but unknown to surgeons of our own time.

Pott was successful because the inflammation in the majority of his cases happened to be strictly limited to the outer surface of the dura mater; and this Pott thought was frequently the case: but further experience has proved that this strict limitation of the inflammation is quite exceptional. In every case of contused bone in which I have found inflammation on the outer surface of the dura mater, I have also found inflammation on the free surface of the arachnoid."

He goes on to say that although there is but little hope of doing any good by trephining in "this all but constant diffuse suppuration of the arachnoid," yet as the operation is the only chance left, we must not lay the trephine aside altogether, as some surgeons have done. And he proceeds to say that,

"We must be specially careful to operate in those cases only where, in addition to fever and rigors, and to the local signs about the bone, there are also well marked brain-symptoms—coma, and,

better still, hemiplegia. With such a train of symptoms, lymph or pus has invariably been found between the bone and the dura mater in all the cases in which I have seen the skull perforated."

There is so much prejudice in the minds of natives of our Presidency against *post mortem* examination, that although injuries of the head, and death therefrom, are often met with, yet the Surgeon seldom gets an opportunity of verifying the accuracy of his diagnosis of the actual lesion which has occurred. The present writer had the advantage, very recently, of making an examination of the head of an individual under the following circumstances. A native man fell heavily from a little height on a bale of cotton. He was a good deal shaken and slightly stunned, but got up and continued his work for some days. Ten days afterwards he suffered from severe pain in the head; fever set in and rigors occurred, active delirium appeared, slight convulsion, deep coma, no hemiplegia, death.

Upon removing the calvaria no injury of the bone could be discovered; the dura mater was apparently healthy, but between the visceral arachnoid and the pia mater there was a thin layer of rather diffluent pus. This was the case over almost the whole of the convex surface of the brain, but it was more marked at the under and internal surfaces of the anterior lobes, around the olfactory bulbs (the grey matter of which was softened), in the fissure of Sylvius, and on the inferior portion of the right hemisphere of the cerebellum. The last named structure was superficially softened, as was also the corpus callosum. Within the lateral ventricles there was a quantity of sanguineous purulent fluid, just sufficient to fill, without distending, them. The third ventricle also contained a similar fluid. The fornix and the commissura mollis were diffluent. The velum interpositum was so softened that it came away in shreds on the application of the forceps, but the choroid plexuses were healthy, though presenting numerous small cysts—a very common condition of these structures, we believe, in natives of India. The corpora striata and optic thalami were less firm than natural, but it was difficult to make out whether this was the effect of disease, or simply *post mortem*. The optic tubercles and medulla oblongata were healthy. The examination was made twenty-six hours after death.

This, then, was a case which would appear, at first sight,

to come under Mr. Hewett's denomination of diffuse suppuration of the arachnoid; but it appears rather to have been one in which slight contusion of the brain superficies had taken place, the force of the contusion having been greatest at the anterior lobes of the cerebrum and the right lateral hemisphere of the cerebellum; whilst the succeeding inflammation was principally confined to the pia mater, the visceral arachnoid being only secondarily and to a slight degree affected.

Those who are acquainted with Mr. Hewett's personal investigations will readily conceive that the greatest minuteness of detail is afforded on all the points connected with fracture of the base of the cranium, and the diagnostic value of hæmorrhage and serous discharges from the ear, nose, or some part of the vault of the skull. We cannot too highly commend this section of the essay to the consideration of those who have any respect for surgical pathology.

We may here remark, *en passant*, that the general character of this treatise is *pathological*, though there is no reticence as regards semeiology, and full instructions are given respecting treatment, which we should not hesitate to pronounce prompt and decided.

There is an admirable chapter on Concussion of the Brain. After relating several instances in which careful examination detected lesion of some other organ of the body, where a superficial and carelessly conducted necropsy might have led to the conclusion that sudden death had arisen simply from concussion of the brain without apparent injury to any structure, our author says:—

"As matters stand at present, then, it still remains to be demonstrated that concussion may prove fatal without leaving a trace of injury in the brain-substance. This conclusion differs, I know, widely from the teaching of some of the greatest Masters in surgery; but I can only say that there is not on record, so far as I have been able to ascertain, a single instance in which the evidence of instantaneous death from simple concussion of the brain will stand the test of anything approaching to a rigid scrutiny."

This section concludes with a paragraph, the important teachings of which, we have reason to fear, require to be constantly enforced upon the attention of the surgeon. One is naturally apt to scrutinize more particularly the part where, as we may say, the focus of the disease is situated,

and to lose sight of the condition of remote organs. Mr. Hewett says:—

"I cannot, however, dismiss this subject of concussion of the brain without again referring to a point which I consider of the utmost importance in all cases of injuries of the head of whatever kind. In dealing with scalp wounds and with fractures of the skull, I pointed out how necessary it was to take into consideration the state of the various viscera, and especially of the kidneys. To scalp wounds and to fractures must now be added concussion of the brain; the diagnosis, the prognosis, and the treatment of which must be greatly influenced by the condition of the viscera."

The chapters on Contusion of the Brain, Hernia Cerebri, Injuries of the various Cranial Nerves (viewed separately), and Traumatic Meningitis and Encephalitis, will amply repay a careful perusal. Upon the whole we think it would be difficult to find, in the English language, a clearer or more reliable account of injuries of the head than that which has been given by Mr. Hewett in the short space which his essay occupies.

Mr. Alexander Shaw contributes the next essay, that on *Injuries of the Back.* In simple, readily intelligible, and easily flowing language, the Senior Surgeon to the Middlesex Hospital has produced by far the best monograph on this subject with which we are acquainted. There is nothing hackneyed about it, on the contrary there is much originality.

Mr. Shaw commences by taking a survey of the structure, in order to be reminded of the parts most subject to injury, under the varieties of exposure to violence. He points out that:—

"The union of mobility with stability, in an erect pillar destined to support weight, implies the introduction of an element of weakness; and we shall find that certain parts are, therefore, more vulnerable than others. The points of greatest weakness are those at which a flexible region joins on to one that is relatively inflexible. Observation has shewn, that of the whole spine, the portions most liable to fracture are the cervico-dorsal and the dorsi-lumbar parts respectively; at each of which a transition, from a structure that is supple, to another that is stiff, or vice versâ, takes place."

Sprains of the back are disposed of in three pages, but not without full consideration. Here it is mentioned that pathologists have not hitherto been able to establish that any particular morbid process is set up as a sequence of

compression or bruising of the kidney which may happen in sudden, extreme flexion of the spine. In severe sprain of the loins blood may appear in the urine, but the discoloration of the water lasts only for two or three days; and when it ceases no further bad effects ensue.

Mr. Shaw then proceeds to the consideration of fractures and dislocations of the vertebræ, and he shows that, with regard to the spine, it is of little moment to recognise distinctly the nature of the injury, whether it be fracture or dislocation, however important such recognition may be in a case of accident to the hip, shoulder, elbow, &c. For what renders injuries of the back of gravest interest to the surgeon, is the question of the condition of the spinal cord; and that organ is equally liable to be crushed, and have its functions destroyed, by fracture, or by dislocation. And the treatment and prognosis are the same in both kinds of injury.

A proper distinction is drawn between fractures from *indirect*, and from *direct* violence. In the former the injurious effects are due to crushing, the line in which the force of compression is exerted being vertical. And the great injury inflicted is the breaking down of the body of the particular vertebra which is situated at the angle of flexion, together with disruption of the joints formed by the articular processes,—such disruption varying in degree according to the region in which it occurs. In fractures and dislocations from *direct* force the column is bent backwards, in the opposite direction to the incurvation which precedes its being broken by indirect violence; the bodies of the vertebræ and the intervertebral cartilages yield by being torn, the arches and processes succumb by being compressed. The effects upon the spinal cord will be for the most part alike, whether the injury occur by direct or by indirect violence.

Mr. Shaw points out the varietes in the effects of fractures in the different regions of the vertebral column; gives an account of the bed-sores which are consequent on traumatic paraplegia; and of the effects on the urinary organs. The prognosis and treatment are next discussed; and under the latter head the author takes occasion to very strongly condemn the practice of trephining the spine. For ourselves we must say that we entirely agree with Mr. Shaw, and we can but feel astonishment at the fact that Dr. Brown-Séquard should

be so strenuous an advocate for the performance of this operation. This great physiologist recommends trephining even in cases where there is doubt as to the exact nature of the injury; and says, "At any rate the worst would only be, that an operation which is not dangerous has been performed without profit."*

Mr. Shaw argues that the compression produced by fragments of the vertebræ actually projected upon the cord, is by no means the sole or principal injury to the medulla. The latter must have been penetrated, or crushed throughout its whole thickness, and its structure utterly destroyed, at the time of the fracture; the elasticity of the vertebral column itself permitting of its recovering its form in a great degree. He shows, further, that the posterior arches of the vertebræ are, with rare exceptions, never detached and driven in upon the cord without fracture through one of the bodies with displacement, and that preserved specimens prove that the greatest injury to the cord is from fragments in front and not behind. He concludes the subject with this sentence:—

"Let the young Surgeon's mind, therefore, be fortified against the influence of the authority in favour of the operation given by certain great men in the profession; let him feel assured that in abstaining from performing it, his forbearance is not neglect, but a positive duty to his patient."

Some remarks upon Concussion of the Spine, and Inflammation after Fracture, conclude this most excellent treatise.

Mr. Holmes' Coote contributes the essay upon *Injuries of the Face*, including Bruises, Wounds, Foreign Bodies, Fractures of both Jaws, and Dislocation of the Lower Jaw. There are numerous references to published cases in this article, but there is nothing particular or original about it to call for remark.

The article *Injuries of the Neck* was written by the late Mr. Henry Gray. It is succint, clear, and exhaustive. Every possible injury to the neck receives due attention.

Mr. Alfred Poland furnishes a short treatise upon *Injuries of the Chest*. Like the generality of Mr. Poland's writings it exhibits praiseworthy research, and judicious instructions as to treatment; but we were somewhat surprised to find penetrating wounds of the chest disposed of in little more

* Course of Lectures on the Central Nervous System. 1860, pp. 257.

than two pages, and throughout the article we do not observe any reference to Mr. Guthrie's observations.

The next essay, on *Injuries of the Abdomen,* is from the pen of Mr. George Pollock, and we think it one of the best in the volume. The author follows the undermentioned arrangement :—*a.* Contusion of the parietes (1) without rupture of viscera, (2) with rupture of viscera. *b.* Wounds (1) of the parietes without protrusion of viscera, (2) with protrusion of viscera, (3) wounds of viscera, (4) fistulæ, gastric and biliary, (5) artificial anus. *c.* Foreign bodies in (1) the stomach, (2) the intestines, (3) the cavity of the peritoneum and in the abdominal wall.

Mr. Pollock quotes a case, reported by Mr. Wood, of Bury, Lancashire, in vol. xliv., p. 213 of the Medical Gazette. A man had suddenly fallen dead in the street, whilst fighting. He was intoxicated at the time, and fell almost immediately after receiving a left-handed blow, apparently not a severe one, on the pit of the stomach. At the necropsy the blood was found in a fluid state, generally, and the pia mater on the surface of the brain and in the sulci between the convolutions excessively congested with dark fluid blood. No other lesion, except contusions about the head and face. Mr. P., a medical gentleman present at the autopsy, considered death might have resulted from over-excitement. Mr. Wood regarded the case "as an unequivocal instance of death from a blow on the epigastrium;" the congestion of the pia mater being, in his opinion, due to the condition of intoxication. Mr. Pollock then cites other reported instances of the kind, examines and criticises them carefully and fairly, and concludes :—

"The author feels it due to Mr. Wood to state, that the case related by him comes near to a fair illustration of the statement and belief, that sudden death is produced by a blow on the epigastrium without evidence of organic lesion; though the author himself is nevertheless somewhat sceptical on the point, that death can occur without any organic mischief resulting from the blow at the time. He has seen nothing to justify any other conclusion. After more than twenty years' experience of vast numbers of accidents admitted into St. George's Hospital, after ample opportunities of examining in the dead-house an immense variety of cases, after reference to all the post-mortem note-books accumulated for many years, and after enquiry among many trustworthy observers, he cannot arrive at any other conclusion; and though he may have erred in this conclusion in the abstract, there can be no doubt that,

as a general rule, sudden death attributable to blows on the stomach or epigastrium must be a rare occurrence; and that Medical men should be extremely guarded in ever offering an opinion as to the cause of death in such supposed injuries, without satisfying themselves, *by most careful and minute investigation*, as to the fact that no violence has been done to the viscera, either abdominal or thoracic."

We think that this is very temperately put, coming as it does from one who has evidently a decided opinion on the matter. It is true that severe pain, or sickness, or faintness, or even a sudden, but temporary, suspension of respiration, may be produced by a blow given with moderate force upon the epigastrium; the effects varying according to the organ which is most influenced by the blow, whether the semi-lunar ganglia and solar plexus, the stomach, the diaphragm, the heart, or the lung. Every one who can recall his school-days with any degree of vividness, must admit from personal knowledge what a very uncomfortable thing it is to be "hit in the wind." But to suppose that a blow of this kind can prove suddenly fatal, without having produced some appreciable lesion, requires a stretch of imagination which we do not possess. So far as we are concerned, this doctrine, together with that similar one of immediate death from concussion of the brain without any observable damage to the cranial contents, may, like hæmorrhage by exhalation, be consigned to that limbo which is peculiarly devoted to the reception of medical fallacies.

The remainder of Mr. Pollock's treatise will amply repay a careful perusal. The sections on rupture and wounds of the intestine, and on artificial anus, are marked by minuteness of detail and sound rules for treatment. We dismiss this portion of the volume, by reproducing the concluding paragraph, which is as follows:—

"In conclusion, the author would urge the importance of *early action*, when operative interference is indicated or offers a prospect of prolonging life, in all cases in which intestinal obstruction is the cause of threatened danger. He believes that, in many instances, an operation for the relief of obstruction is fatal in consequence of being performed *too late*—that is to say, after peritonitis has commenced. He believes that the wound of the peritonæum, necessary in many operations for the relief of obstruction, is a minor evil; that it is not the operation or its effects that destroy life; but that when a patient suffering from obstruction dies after operation, he dies from the effects of peritonitis produced by the obstruction, and not from any effects attributable to the use of the knife."

Injuries of the Pelvis are treated of by Mr. Birkett. This essay occupies only forty-two pages, but it is very comprehensive. The arrangement of the subject is as follows: I. Contusions involving the soft parts in contact with the Pelvis. II. Fractures and Dislocations of the bones forming the Pelvis. III. Injuries of those organs in relation with the Pelvis which are connected with the functions A, of Micturition; B, of Generation, male and female; C, of Defæcation. Mr. Birkett notices an injury which has escaped the observation of surgical authors generally. This is, rupture of the vas deferens. He relates three cases, the histories of which were furnished by Mr. Hilton, in which this duct was apparently torn completely across. Besides these cases, each of which recovered with no other ill result than partial atrophy of the testis on the corresponding side—the right in each case—Mr. Hilton reports that he accidentally discovered, when making a *post mortem* examination of a case, that one testis was excessively atrophied, and the vas deferens of the same gland ruptured and closed at both ends. The ends were at least two inches apart. The lowermost was lying near the crossing of its course with the ureter, the upper end was adherent to the surrounding connective tissue, near the internal ring. The vesicula seminalis on the same side was smaller than that on the opposite.

We think it right that the notice of the profession should be drawn to the possibility of the occurrence of such an accident. Mr. Birkett gives the following as the indication of this injury:—

"A sudden and violent pain in the groin, arising as the result of severe exertion, or of a blow; the flow of bright red blood from the urethra, although the urine which the bladder contains is free from blood; gradually increasing pain, which extends over the lower part of the abdomen, accompanied with more or less pyrexia. The bleeding ceases; the pain subsides; but the testis on the affected side becomes at first swollen and tender, and finally diminishes, until, after the lapse of a few weeks, it becomes atrophied."

Mr. Hilton noticed that the vesicula seminalis of the injured side was smaller than the other; this was not necessarily, though highly probably, connected with the injury; it has happened to us upon several occasions to observe a difference in size of the two vesiculæ seminales.

Seventy-one pages are devoted by Mr. W. H. Flower to

Injuries of the Upper Extremity. And Mr. Carsten Holthouse occupies eighty-four pages with an account of *Injuries of the Lower Extremity.* Each of these articles cannot fail to add to the reputation of its author.

The remainder of the volume, two hundred and twenty-three pages, is the space occupied by Mr. Dixon's treatise on *Diseases of the Eye.* When one remembers the bulky volumes which are generally devoted to this important subject, one feels surprise at Mr. Dixon's finding it possible to condense his article to the degree he has done. But at the same time it must be acknowledged that this has been arrived at by the avoidance of unnecessary anatomical details, and by keeping up, what, we have before observed, is the general character of this System of Surgery, viz., a "full, true and particular" account of all that is known, and believed, without reference to all that has been previously supposed to be fact; so that the work shall be eminently modern and practical, rather than historical.

We had marked several parts of this essay for observation and extract, but the space we have already occupied forbids indulging in our wish. We can confidently assure our readers that they will find Mr. Dixon's article a very comprehensive one, and so far as practice is concerned a thoroughly reliable one.

It would be impossible to meet with a more concise, clear and admirable description of the varietes of cataract. The anatomical and pathological peculiarities on which these varietes depend are very lucidly explained. And the account of the different operations is equally worthy of Mr. Dixon's reputation as an oculist and author. We are pleased to find that he unhesitatingly condemns the operation of couching, which we have always looked upon as a most unscientific proceeding. Where all is excellent it would be invidious to make any particular selection, but we incline to the opinion that the chapter on Diseases of the Lens and its Capsule, is one of the best in the book, and if not actually in advance of, is at all events equal to, anything that has hitherto been written upon the subject.

We had intended to make here some remarks upon certain points connected with ophthalmic practice in India, such as the cause of the remarkable frequency of cataract amongst natives, the impediments to the operation of extraction in these persons, viz., the depth at which the globe is situated,

the general shortness of the palpebral fissure, and the great tendency there is in them to sloughing of the edges of the corneal wound; but there is no space at our command, and we are therefore compelled to take leave of this second instalment of the "System of Surgery, in Treatises by Various Authors." We are bound to acknowledge that little as there was to object to in the first volume, there is still less in the second; and we heartily congratulate the Editor, Contributors and Publishers at the success of their efforts, which we trust will be duly appreciated. We shall not consider that any modern surgical library is complete until these volumes find a place on the shelves.

In our next number we trust to give a notice of the third volume which has just reached us.

The Influence of Tropical Climates in producing the Acute Endemic Diseases of Europeans; including Practical Observations on the Nature and Treatment of their Chronic Sequelæ, under the Influence of the Climate of Europe. By Sir James Ranald Martin, C. B., F.R.S., Physician to the Council of India, &c., &c. Second Edition. London: John Churchill—1861. 8vo., pp. 778.

When nominated to the appointment of Assistant Surgeon in the Service of the late Honorable East India Company—we need not indicate the exact period, suffice it to say, it was before First Class Assistant Surgeons were invented,—we underwent an examination, at the hands of their late physician, on Medicine and Ophthalmic Surgery, the result of which was the presentation to the berth. We then felt it incumbent upon us to be in possession of a standard work on Tropical Diseases, and our enquiries led us to invest a portion of our stores in "Annesley's Diseases of India." We soon found that it was not quite the book for our purpose; at all events so far as treatment was concerned we felt we could never conscientiously carry out the precepts therein inculcated. We had early conceived a notion that calomel was not a cure-all; that very many of the effects ordinarily attributed to it were, at the least, doubtful; and that grave consequences frequently resulted from its indiscriminate use.

Mr. Martin's work came under our notice after we had had some Indian experience, and, although, from the title given to it, we feared it was not exactly what we required, we had cut but a very few pages when we found that it was evidently exactly suited to our wants. We make no doubt that very many of our contemporaries have read the work with a pleasure and profit equal to that which we derived from its study.

Since the appearance of the first edition of the work in its present form, the author has met with the just reward of his many labours on behalf of the European soldier in India by having been created a Companion of the Bath; and, notwithstanding the active employment of his time in a large practice and as Physician to the Council of India, he has taken every opportunity of gleaning materials, from very many sources, for the improvement and elaboration of his book.

This new edition, although not entirely re-written, has undergone a partial re-arrangement, and has been considerably enlarged by the incorporation of much new matter. The first edition contained 600 pages, of 46 lines each; in the present edition the type is the same, and there are 778 pages of 48 lines each.

A portion of the newly introduced matter comprises a statistical account of the Influence of Climate and Season in the Presidency of Madras. And throughout the work we find that whenever any light has been thrown, by enlarged experience, upon the pathology or treatment of disease, Sir R. Martin has not failed to avail himself of the information. Thus in the treatment of Acute Dysentery, the question of large doses of ipecacuanha is introduced, and our own journal is brought into requisition, and the reports of Messrs. Blacklock and Cornish upon this subject freely laid under contribution.

Again, under the head of Delirium Tremens, the plan of treatment with large doses of Tincture of Digitalis finds a place.

The chapters on Prevention of Disease, and those on the Chronic Diseases of Europeans on their return from tropical climates, deserve careful study; the former, especially, by those intending to carry on their practice in India; the latter by those who are practising at home.

Sir Ranald Martin's book is now so well known and so

thoroughly appreciated as to be received as a kind of text-book upon the subject of which it treats, and it would therefore be perfectly superfluous on our parts to offer any commendation of it. It is not only an exposition of the views of its observant author, but it is also a complete summary of all that has been written upon Tropical Diseases.

There is just one very small section of Sir Ranald Martin's book which we should have liked to have been omitted. The author must be so vastly beyond the reach of anything approaching to self-laudation, so thoroughly apart from that class of men who have not inaptly been described as "resurrectionists," in consequence of their always reporting that the cases under their care were of the most serious and fatal character, and that nothing but their line of treatment could possibly have restored their patients, that we must own to some little surprise at the reports of "cases" which occupy the last few pages of the volume. We should have looked upon their omission from this edition as anything but a blemish. One patient writes, "I cannot conclude without expressing my conviction that, under Providence, I owe my life to the treatment directed by Mr. Martin;" and another says, "Treatment having failed of doing me good, I embarked, by the advice of my Medical attendant, for England, in January, 1855. During the voyage round the Cape I had partly the assistance of the Surgeon of the vessel, but without any avail; and in April of the same year I arrived in England, and on the 26th of that month consulted Mr. J. R. Martin, of Grosvenor street, and formerly of Calcutta, * * I am now in a state of feeling of comfort and health, such as I have not experienced for a couple of years," &c.

Were it not for the scientific character, and evident *bona fides* of this work, such sentences as we have above extracted would have painfully reminded us of the twin documents which years ago we used to see enclosed in glass cases and attached to the door posts of London lodging houses;—"This is a specimen of my handwriting *before* taking six lessons of Mr. Lewis." And "This is a specimen of my handwriting *after* taking six lessons of Mr. Lewis."

Surely Sir R. Martin will agree with us that whatever cases he has to relate should be given in his own language, and that these patients' statements should be consigned to the waste paper basket.

However "forewarned is forearmed," and our readers, knowing that these "cases" are at the end of the volume, need not peruse them.

We can most conscientiously assure those who are practising medicine in the Eastern Tropics that their libraries will not be complete without they contain Sir R. Martin's work; a constant reference to the pages of which cannot otherwise than greatly assist them in the elucidation of some of the more knotty points which frequently present themselves to the mind of the practitioner in India.

The Timber Trees of India, Alphabetically arranged; with Vernacular names, Qualities, &c. of Wood, and Source of Supply. By GEORGE BIDIE, M.B., Assistant Surgeon, H. M. Madras Army. Madras: GANTZ BROTHERS—Adelphi Press, 1862, pamphlet, pp. 23.

THE Botanical explorer in India prosecutes his pursuits under considerable difficulties. Unlike what obtains at home, where the complete and elaborate works of Withering, of Hooker, and of Lindley render the identification of almost every plant he finds an easy matter, he discovers in the publications of Roxburgh, Wallich, Voigt, Griffith, Wight, Royle and Hooker very partial and inadequate auxiliaries in his investigations in this country. Far be it from us, however, to under-rate the labours of these authors. They have each and all done their quota of work, and the wonder is that they have done it so well amid their many and various official duties. Still the imperfections of the volumes of some, and the fragmentary character of the writings of others, detract from their value to the student of Botany, especially in his explorations of wood, field, and forest.

We need some master-mind to evolve from the materials, at present scattered through many books and pamphlets, a really good FLORA INDICA, and would only bargain that the task shall not be executed by a mere *helluo librorum* buried in the recesses of a cabinet, but by an earnest and practical botanist, who will, by actual examinations of plants on hill and valley, verify the researches of his predecessors and recommend his own.

No one is better qualified for so great a work than Dr.

Cleghorn, to whom we commend it as an undertaking altogether worthy of so accomplished a votary of natural science. Nor are there wanting men in the Indian service, whom he will find efficient coadjutors in elaborating this great botanical want of India. Among their number is the writer of the *brochure,* whose title introduces the present review, although we cannot congratulate him on the pamphlet now before us. We had hoped it would prove a valuable acquisition, because a real assistance, to the student in his rambles, and an useful contribution to the complete Flora which we desiderate. This is, however, not the case. And yet the author is not at fault. He has literally fulfilled the pledge conveyed on the title page of his opuscule, and is certainly not open to blame, because we hoped and looked in vain for what he did not promise.

Whether there exists an actual demand for such a monograph, his publishers can better tell than we, and it is to be hoped that a second edition may soon set the question at rest, and reward the able author for his trouble. But Dr. Bidie is well qualified to fly at higher game than the mere *Index arborum* lying on our table. Even supposing that the public require such a re-arrangement of information, which can for the most part be easily gleaned from Dr. Cleghorn's and Major Drury's recent publications, a zealous and well-informed naturalist like our author will do well to attempt something better. Let him cater for the requirements of the many who travel through the wilds of our Indian jungles, and clamber our lofty ghauts clothed with so rich and luxuriant vegetation, and who would give much for a book that will assist them in determining the natural family, genus, and species of each tree and plant they see.

This preliminary but necessary information once acquired, they will meet with no difficulty in obtaining other particulars in the Natural History of the objects they examine, from the many botanical treatises at command. To men ignorant of the names and orders of plants, works alphabetically arranged are of little or no use. Although in his brief preface, our author asserts that "with the help of the Indices of Vernacular names, any one may readily discover the botanical name of a tree and its economical value," we demur to the correctness of his assertion. Many even of those who have passed years in this "land of the Sun," would find the greatest difficulty in identifying the *spoken*

names of the trees they see with those *printed* in the Vernacular indices. But that objection does not stand alone. Few natives of this country are well acquainted with the nomenclature of the plants around them, and hence the same plant is often dubbed with two or three different designations by as many individuals. In this want of knowledge on the part of the people themselves there exists a source of error fatal to the utility of Dr. Bidie's brochure as a means of learning the generic and specific names, and natural orders of the trees to which it refers. That it contains much useful information we grant, but we cannot concede that the information is presented in such an arrangement as to render it as useful as it might be made, or that the pamphlet contains all the most important particulars available regarding each species of tree.

We trust, however, that these observations will in no wise deter our author from the prosecution of the special branch of Science to which, amid arduous professional duties, he directed his researches—and in which he has already accomplished much of practical utility.

On Obscure Diseases of the Brain and Disorders of the Mind. By Forbes Winslow, M.D., D.C.L, Oxon; &c., &c., &c., Second Edition, Revised—London: John W. Davies, 54, Princes Street, Leicester Square; Edinburgh: Maclachlan and Stewart; Dublin: Fannin and Co., 1861.

If rapidity of sale be any test of the popularity of a book, then may the work of Dr. Forbes Winslow "On Obscure Diseases of the Brain and Mind," be pronounced a real success. We are not at all surprised, looking at the world-wide reputation of the author, in his own special domain of Psychological Science, to find the following announcement in the advertisement to the second Edition.

"The rapid sale of the first, and the continued demand for a second edition of this work, render it imperative upon me to go again to press much earlier than I had anticipated. I have made many alterations, and, I trust, amendments in this Edition.

In the concluding chapter I have, with the view to the introduction of more practical matter relative to the subject of treatment, incorporated a few extracts from my "*Lettsomian Lectures on Insanity*," published some years ago, and now out of print."

At this late period, it would be somewhat out of place to enter upon a critical analysis of the seven hundred pages of matter which go to make up the volume, and we shall therefore confine our remarks to a few points which we have noted, and express briefly our warm commendation of the completed work, which for perspicuity of arrangement, intimate knowledge of the subtle workings of "the mind diseased," and clear, forcible expression of the author's meaning, has, in our opinion, no rival in British or Foreign Medical literature.

In the preface we are told that the volume before us is an introduction to another, which we hope soon to welcome, on "*Softening and other Types of Organic Disease of the Cerebro-spinal System.*" No one is better qualified than Dr. Forbes Winslow to do justice to so comprehensive a sketch of the diseases of the brain and nervous centres, as he has drawn the outline of. In the interests of science generally, and of mental pathology in particular, we earnestly hope that the author may, in God's good providence, be spared to fill in, from the rich field of his professional experience, the practical details of the several disordered conditions of the brain and nerves, which must have been collected in many years of laborious and zealous devotion to the treatment of the insane.

We seldom see so much importance attached to the necessity of attending to "small beginnings" in the treatment of disease as in the work before us. Dr. Winslow shows very clearly what all medical men admit, that insanity is not a thing of sudden development, that as in all disorders of functional action of vital organs, or pathological changes in their structure, there are certain symptoms, or indications of what is going on within, so to those who can read them aright, the first deviations from normal mental health and vigour, are the precursors of encephalic organic change, or of perverted intellect.

Most persons accustomed to the treatment of disease will agree in the truth of the following remark of Dr. Winslow :—

"Affections of the brain, like those of other organs, have, I am satisfied, a premonitory and precursory stage, and in the majority of cases the mischief established within the cranium, disorganising the delicate tissue of the brain, may, upon careful examination, be detected. There are pathognomonic and diagnostic precursory signs, which serve to guide the inquiring, diligent, observant, and intelligent eye of the practical physician, and enable him with some

degree of certainty, to discover the early evidences of brain disease, even when the patient and those about him repudiate all idea of cerebral ill health, and refuse to acknowledge the necessity for Medical advice, or treatment."

Unfortunately the public cannot be persuaded of the necessity of attending to the early symptoms of brain or mental disease. It is so easy, and so satisfactory to the feeling of the patient, to account for the headache, giddiness, vertigo, slight loss of sensibility and mobility of the extremities, depression, or exaltation of spirits, irritable temper, and gloomy despondency, which mark the commencement in some cases, of a diseased condition of the brain, to derangement of the stomach, or superfluity of bile, that the importance of these early symptoms in connection with cerebral disease is often lost sight of altogether. When the patient has been struck down by apoplexy, or paralysis, or madness, then the small beginnings of disease are remembered, but too late to permit of the evil which they ought to have portended, being averted.

When a man obstinately persists in trying to persuade himself that he is quite well, against the repeated cautions and advice of his Physician, and throws extra labour upon his brain and nervous system, just when they demand uninterrupted repose, we all know that the inevitable result must be serious organic changes in the cerebral structure, with or without loss of reason. We know of no more melancholy task devolving upon the practising physician than to have to look on, and see the wreck of mind and brain resulting in great measure from neglect, on the part of the patient, of his repeated advice, and warning of impending danger.

If it be a well established fact that from 70 to 80 per cent. of cases of insanity admit of easy and speedy cure, provided there be no strong predisposition to cerebral or mental affections, it behoves every one concerned, to see that the slightest deviations from mental health, are submitted to the opinion of the intelligent physician, instead of, as is too commonly the case, concealed as long as possible from professional scrutiny.

When diseased cerebral *action* shall be more generally recognised as precursory to diseased *organization*, and brought under the physician's notice, the long list of incurables now filling our Lunatic Asylums to overflowing, may receive fewer additions to their number. If insanity is

curable at all, it is so in its early stages, and this view of the case, notwithstanding the difficulties in the way of secluding from society individuals who may not be *legally* incapable of managing themselves and their affairs, must sooner or later guide the legislature, in its provision for persons of unsound mind.

There seems to be an impression abroad in influential quarters, that so far as the rational treatment of natives of India afflicted with insanity is concerned, nothing need be done.

Practically this view of the subject has obtained for many years past. The only institution for the reception of lunatics, criminal, or otherwise, of the 22 millions of inhabitants of the Madras Presidency, is the Lunatic Asylum of the Presidency Town, which is capable of accommodating, when quite full, from 50 to 60 patients. A design for a new asylum here, in accordance with the requirements of scientific medicine, and the actual wants of the country, has, we understand, after some years of consideration been thrown aside, as unnecessary. Nothing seems likely to be done to ameliorate the condition of the native insane. The poor creatures are still to wallow in and bedaub themselves with their own excrement, and to sink to a lower intellectual level than the brutes of the field, without an effort being made to bring back reason and intelligence to their legitimate seat. And yet we see no cause why the cure of insanity in the Hindoo should be more difficult of accomplishment than in the insane of any other race or country. We do not know what the experience of the other Presidencies—where the necessity for district asylums appears to be recognized—may be, but it is only fair to conclude that the Hindoo is amenable to the influences of kind and rational treatment, as well as the people of other nations.

Western medical science has not been unsuccessfully employed in the treatment of ordinary diseases of the natives of the country. Why should cerebro-psychical disorders alone be practically considered incapable of alleviation or cure?

The present want of provision for the insane of this Presidency appears to us as a blot upon the administration, and, viewed in connection with the progress of civilization in the latter half of the nineteenth century, simply disgraceful,

That a more enlightened era may be dawning upon us, must be the earnest wish of every right thinking individual, and we would fain hope that the period may not be far distant when every district, or zillah, will have its asylum for lunatics, and that, from the experience of those Institutions, the peculiarities and more common forms of mental and moral perversion as witnessed in the natives of the country, may be made subservient to the progress of our knowledge of Mental Pathology.

To revert to Dr. Winslow's book,—it is one that should be read by every man interested in the advancement of Medical Science. Besides discussing very fully the Morbid Phenomena of Intelligence—(1) states of motion, (2) conditions of sensation, (3) of the special senses, (4) of sleep and dreaming, (5) of organic, or nutritive life, (6) and the general principles of pathology, treatment, and prophylaxis, it abounds in anecdote, and striking illustrations. As a scientific work of high pretentions, it is one of the most *readable*, and interesting books we have ever had the good fortune to peruse. The typography and paper are of high excellence, and the getting up of the work reflects most creditably upon Mr. Davies, the publisher.

PART III.

MEDICAL MISCELLANY.

No. 10.—*Case of Tetanus, successfully treated by Stimulants and Tonics.* By H. E. Busteed, Esq., Civil Surgeon of Cuddalore.

Frank Bailey, Æt. 10. A delicate looking lad, the son of a pensioner, was brought into hospital at 8 A. M. on the 7th June 1862, with painful rigidity of the muscles of the neck, back, abdomen and extremities, which prevented him walking or sitting. The masseters were perfectly rigid, and the mouth so firmly closed as to prevent the protrusion of more than the mere tip of the tongue. The boy spoke with his teeth set, and swallowed with difficulty. There was no true *risus:* the alæ nasi were expanded, the corners of the mouth drawn down, and the lips were compressed against the teeth from spasm of the sphincter oris muscle—the appearance of his face being expressive of great, though patient, suffering.

The sterno-cleido-mastoidei and trapezii muscles were particularly hard and painful, and the abdomen was quite tense.

The only complaint the boy made was of pain referred to the lower end of the sternum. On admission the skin was warm and moist; bowels were said to be regular; urine pale and abundant; pulse frequent; appetite bad; and the patient had not slept for two nights.

On being put into bed he had spasmodic twitchings of the whole body which recurred every ten or fifteen minutes, and were excited by the most trifling causes, such as opening a door, touching him, &c. During these paroxysms he cried from the pain in the sternum becoming increased.

No wound or injury whatever of the surface could be discovered. His friends, who were able to give very little information, merely stated that he had been ailing for two days; but that he made no specific complaint until immediately before being brought into hospital, when, on sitting to his food, he fell backwards screaming from pain in his chest.

A smart purgative draught was given with the greatest

difficulty, which failing to operate speedily, an enema containing turpentine was administered and hot fomentations applied to the abdomen. In a little time the bowels were thoroughly acted upon—the evacuations consisted of hard lumps with liquid fæces of a yellowish color, but not particularly fetid. All the symptoms appeared much relieved after this. The patient was able to open his mouth sufficiently to protrude more than the tip of the tongue, which was white and covered with red points, and the abdomen became less tense.

Quinine gr. i., with brandy ʒ ss., was ordered every third hour, and broth and conjee to be freely given.

In the evening he was somewhat quieter: the spasms, which had harassed him much during the day, recurred less frequently; the pain in the chest however continued to distress him.

For eleven hours, viz., from 3 P. M. of the 7th to 2 A. M. of the 8th, he was free from spasm, and slept for about three hours. He was awakened by a violent paroxysm which affected the whole frame and caused much pain. The spasms recurred several times until 4 A. M., when he fell asleep. In two hours he awoke screaming from the violence of a paroxysm during which his head was thrown forcibly back and his body stiffened; but complete opisthotonos did not occur.

During the paroxysms which lasted little more than a minute each, the surface of the body became drenched with perspiration, and the pulse increased in frequency by an average of 28 beats per minute. During sleep the muscles became relaxed to a certain extent, but still retained a degree of rigidity. The features also then assumed more of their natural aspect, though the dilated nostril was an appearance that persisted throughout.

On the evening of the 8th the quinine was increased to two grains per dose; a liniment composed of extract of Belladonna, Fleming's tincture of aconite and oil, was ordered to be rubbed into the sternum; and the spine was sponged with a cold evaporating lotion. These measures were followed by relief to the pain in the sternum; and though he was troubled with the spasms through the night, he slept during the intervals.

As it would be too tedious to give here the details of the case as they were noted at the time, several times daily,

the following reports are made to embrace all that is considered interesting relative to the progress of the case. Early in the treatment his cot was surrounded by curtains placed at a little distance so as to allow a free passage round him—these kept away gusts of wind, and modified other probable sources of distress.

10*th.*—Yesterday forenoon he had frequent and severe attacks of spasm which ceased after the operation of a dose of castor oil and turpentine which was exhibited in the morning. He subsequently continued free from spasm for ten hours, and was asleep when it returned. The paroxysms recurred every five or ten minutes for about two hours, after which he fell asleep and passed a tolerably comfortable night. He awoke several times from the spasm, but the attacks were slight and confined to the extremities. Still complains of pain in the sternum. Abdomen soft; muscles of neck and back stiff; skin cool, moist; tongue white; pulse 110 last night, is now 92; alæ nasi dilated; mouth not so much drawn down. Takes nourishment freely.

7th day of disease. 5th of treatment.

Cont. Med.

11*th.*—Was free from spasm during the day yesterday, but had a bad night, having been much disturbed by spasm, which he complained of as affecting the left shoulder. He is however cheerful this morning, and says he has no pain. There is some relaxation of the sterno-mastoidei, but the trapezii are rigid. He is unable to raise himself. Skin cool.

8th day of disease. 6th of treatment.

Cont. Med.

12*th.*—Was free from spasm during the day, but passed a very restless night, the spasms having been particularly severe. The sterno-mastoidei and trapezii rigid and painful, and he again complains of the pain in sternum. Abdomen soft; skin cool; tongue cleaning; bowels moved once this morning; appetite continues good.

9th day of disease. 7th of treatment.

Cont. Med.

To have a purgative enema with turpentine.

13*th.*—Had several painful attacks of spasms yesterday, affecting the left shoulder and extending up the neck. The enema acted freely. He had one very severe paroxysm of spasm last night which appeared to affect the abdominal

10th day of disease. 8th of treatment.

muscles principally. Had several more attacks less severe during the night, but slept in the intervals. Tongue again white with red points—tip covered with aphthæ ; skin cool ; abdomen tense ; muscles of neck and back stiff.

Cont. Med.

11th day of disease. 9th of treatment.

14*th*.—Had no recurrence of the spasm until after 3 P. M. yesterday, when he had one very severe attack more closely approaching opisthotonos than any he has had yet. Passed a very quiet night and slept well. Has no pain in the chest ; tongue white ; pulse 90 ; opens his mouth with more freedom. Appetite good. Muscles of neck, back and abdomen still stiff, and he is unable to sit up.

Cont. Med.

Repeat the enema.

14th day of disease. 12th of treatment.

17*th*.—Has had no tetanic spasm since last report, and is able to sit up without help. Stiffness of the sterno-mastoidei, trapezii and abdominal muscles continues. Bowels kept freely open by enemata containing turpentine, assisted by hot fomentations to abdomen. Appetite good ; sleeps well ; tongue cleaning ; pulse less frequent.

The quantity of quinine and brandy has been gradually diminished since the 15th. He has now taken in all one drachm and fifty seven grains of quinine, and thirty-two ounces of brandy.

20*th*.—Improving slowly. Is able to walk a little, but is still stiff. Otherwise doing well. Countenance assuming a more natural expression. Appetite good ; sleep sound ; bowels regular ; tongue clean. Is still taking a dose of the quinine and brandy morning and evening.

Omit. Med.

24*th*.—Doing well. Walks about without assistance. Functions normal.

Remarks.—Experience seems to show that though the prognosis in Idiopathic Tetanus is, as a general rule, favorable, still ultimate recovery, even in the mild and prolonged cases, is too often hoped for in vain.

Two or three points of interest may be noticed :—viz., the difficulty of determining the exciting cause ; whether it was exposure to cold or damp, or the presence of hardened fæces in the intestines of an individual predisposed for some reason

or other to tetanus. It was owing to a suspicion of this latter cause that the purgative was given in the first instance—the marked relief occasioned by which indicated the desirability of clearing out the bowels with stimulating aperients from time to time. The large quantity of quinine and brandy consumed by one so young without either cinchonism or alcoholism being produced* is of interest.

Good effect seemed to follow the application of cold to the spine, it was the only substitute to be had for the ice recommended by Dr. Todd for diminishing the (supposed) exalted polarity of the nervous centres.

In Vol. ii., page 401, Madras Quarterly Journal is a very interesting case of Tetanus, by Dr. Donaldson. My object in submitting this present case is identical with Dr. D.'s, viz., "to point out the success attending the tonic and stimulant plan of treatment" in "what may be termed asthenic tetanus."

As in cholera, so in tetanus, our ignorance of pathological conditions obliges us to resort to empiricism instead of to rational medicine for a remedy. Under these circumstances, as we must necessarily be working in the dark, would it not be well to remember that amongst our duties to our patient, the first is the negative one of, at all events, "doing him no harm?"

"Those remedies," says Mr. Poland (Holmes' System of Surgery, Art. Tetanus) "which have had a more direct influence, have been such as have rendered the patient more able to fight against the battle of spasmodic action. We must recollect that tetanus runs a certain course; it has its period of accession, its height and intense activity, and its gradual decline. It often kills by exhaustion during its decline. Nothing seems to check its regular course, there is no control in its unvarying and too often fatal career; it will have its sway. All we can do is to enable our patient to weather out the storm by giving him as much strength as possible, and not adding fuel to the fire by all sorts of applications and internal remedies which have over and over again signally failed."

* The "tolerance" in tetanus of certain drugs has been frequently the subject of remark. Opium, aconite and conium are among the instances. It would not perhaps be far wrong to say that there is tolerance of *every* drug—of some more than others in this disease.

If I get an opportunity, it is my intention to put this boy, in a couple of months hence, on the same doses with similar diet, and to note the effects.

It is impossible however to shut our eyes to the success of a line of treatment occasionally adopted, on the very high authority of Mr. Campbell De Morgan, who recommends in tetanus "a full and complete trial of aconite" in extraordinary and rapidly repeated doses. Dr. Smith's case in Vol. ii., page 86, of this journal was a successful instance of this treatment. Still we are very far yet from having sufficient experience to allow us to regard it as any thing but a doubtful remedy. I should almost say it would be unjustifiable in a case of tetanus presenting itself in an asthenic subject. It is worthy of remark that in these cases treated with aconite, the diet was of the most nutritious kind, viz., broths, wine, stimulants, &c.*

Having made these brief allusions to two opposite plans of treatment—the Stimulant and the Sedative, it may not be out of place here to quote some words which it behoves us all to weigh and to consider. Dr. Todd† says :—

"I am convinced that it is much better to err on the side of over-stimulation than not to give enough ; for if we have over-stimulated a patient it is very easy to pull him down again ; there are plenty of appliances and means for this ; but if the patient sink too low, nothing is more difficult than to restore him. If, by your feeding and stimulating, the thermometer of life has risen to too high a point, nothing is easier than to depress it ; but if fallen below a certain point, then to raise it again, much more to restore it to the height from which it fell *hic labor, hoc opus est.*"

No. 11.—*Case of Popliteal Aneurism treated in the Bangalore Cantonment Civil Hospital.* By Surgeon Major J. KIRKPATRICK, M.D., Surgeon to the Mysore Commission.

BELIEVING that aneurism was rather an uncommon affection amongst natives of this part of India, I submitted for publication in No. III of the Madras Quarterly Jonrnal of Medical Science, an account of a case of popliteal aneurism

* It is pretty generally allowed that tetanus is as identical as possible with the condition induced in the system by the reception of strychnia poison. An experiment which I hope soon to try on dogs and other animals ought to be an interesting one, viz., to exhibit hypodermically to animals certain quantities of strychnia, and then to treat some on the stimulant plan, so as to try and help nature, and others with hypodermic doses of aconitina, atropina, &c., and a fair amount of nourishment.

† Clinical Lectures, 2nd Ed., page 118.

which occurred in my practice, and retaining that belief though several other cases of the disease have been published in the same journal, I now present another instance of the disease for record.

The case about to be detailed presented no unusual features, except that the separation of the ligature was delayed to so late a time as the fifth week after the deligation. The treatment by pressure was first tried, but this having been unskilfully applied, failed, and ligature was resorted to with a successful result. The aneurism was very large and rapidly increasing in size when the operation was performed; and the patient was addicted to drink, on which account he was allowed a supply of arrack during the treatment.

Thowe, a stout healthy-looking man, aged about 35, caste Pariah, by trade a cook, admitted 17th Jany. 1862, on account of a large painful pulsating swelling of the lower and posterior part of the right thigh: the centre and most prominent part of the tumor is about three inches above the knee and in a line with the tendon of the adductor magnus. In length the tumor may be about four inches, and in breadth it extends quite across the back of the thigh. It is throughout tense and pulsating strongly. With the stethoscope a strong aneurismal bruit can be heard in it. The patient is able to bend his knee, but not freely. He states that he first felt pain, with swelling in the calf of the leg about three months ago, after having been obliged to exert himself a good deal in walking; that the pain shortly extended up and down the limb, and he became unable to bend the knee freely; and that about a month ago only, he noticed the swelling in its present situation, since when it has rapidly increased in size.

As the knee cannot be fully bent, and as such flexure as can be permitted has no effect in diminishing the pulsation in the tumor, Dr. Jephson's compressing clamp is to be applied.

18*th January.*—The clamp was applied yesterday in two places in Scarpa's triangle. It has not at all diminished the pulsation in the tumor, but has caused bruising and vesication of the skin, and there is considerable additional swelling of the thigh. Clamp to be removed and a vinegar and water lotion used.

19*th.*—More swelling of the thigh, tumor apparently

larger with strong pulsation. Circumference of thigh over centre of tumor eighteen inches: more pain.

Continue lotion.

A consultation to be held to-morrow to consider the propriety of applying a ligature.

20*th.*—A consultation with Drs. Pringle, Jephson and Houston having been held, it was decided that it would be inexpedient to attempt a repetition of the treatment by pressure, and that the operation of ligature should be performed. The patient was then placed under chloroform, an incision of about three inches in length was made, and the femoral artery tied in the usual situation at the apex of Scarpa's triangle. The only difficulty met with during the operation, was that, from the thickness and infiltration of the areolar tissues, the artery was more deeply situated than usual.

℥ ss. of Liq. Opii. Sedativus to be given at bed time if the patient be restless.

21*st.*—Was rather restless at 10 P. M., so the draught was given, it quieted him; the pain in the tumor is less, and there is no pulsation.

Repeat the draught if necessary.

22*nd.*—Had the sedative draught last night, after which he passed a good night, feels easier and in every respect better; tumor somewhat diminished. Bowels not moved since the 20th.

Ol. Ricini. ℥ iss. Cont. Med.

27*th.*—The sutures (iron wire) though apparently causing very little irritation, removed. On strapping the wound about half a drachm of good pus welled up from the course of the ligature.

29*th.*—Slight serous discharge to-day from the course of the ligature, otherwise the same.

℥ i. of arrack morning and evening.

7*th February.*—Circumference of thigh over centre of tumor $16\frac{3}{4}$ inches. Free from pain; bowels regular.

18*th.*—Yesterday there was some pain in the wound and extending down the thigh along the course of the artery, but after the escape of a small quantity of blood and pus, the pain ceased.

25*th.*—The ligature came off to-day. (The loop round the artery had been quite tight).

27*th.*—Swelling considerably less, and no pain on pressure. Circumference of thigh over centre of tumor 15¼ inches.

18*th March.*—Wound all soundly healed except at the spot where the ligature protruded, where there is a fistulous sore which has been rather obstinate in healing.

29*th.*—Wound quite healed: the circumference of the lower part of the thigh measures 15 inches. There is no pain or pulsation in the tumor. General health good, patient feels strong, and wishes to be discharged from hospital. Discharged cured.

No. 12.—*Case of Melanotic Cancerous Tumour in the Neck.*
By T. Lowe, Medical Officer, Dowlaishweram.

This tumour* appeared in the neck of a native aged 50 years. It was of very rapid growth—having developed and killed the man in less than three years, which appears to be about the ultimatum of such growths. The tumour measured from the base of the jaw to the clavicle ten inches and a half, and around, from side to side, eight inches and a half. It had pushed the larynx and trachea over to the left side of the neck, and had caused difficulty both of breathing and swallowing. Before the tumour appeared he was a strong stout man, he afterwards became much emaciated. The external carotid artery of right side was pushed to an inch and a half behind the line of the lobe of the ear. Tumour elastic and fluctuating, and painful in the front, *but no particular pain accompanied this diseased growth.* Integuments tolerably moveable, but adherent in front.

Suppuration had evidently taken place within the growth, which extended deep into the subjacent and contiguous tissues.

On the 3rd of February an exploratory incision was made over this tumour, Dr. Macdonald of Rajahmundry assisting, when its true nature was discovered, and further proceeding with the view of extirpation was considered impossible.

The wound was closed again, and the man gradually sank, as by slow strangulation, on the 11th of February.

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* We regret that we are unable to reproduce the drawing accompanying Mr. Lowe's case.—Ed. *M. Q. J.*

Post-mortem.—On dissecting out this tumour I found it had implicated the parotid, submaxillary, and cervical glands; that it was firmly adherent to the muscles of the spine, the larynx, and rings of the trachea; that it extended down to the subclavian artery and was adherent to the subclavian vein; and that the thyroid axis of vessels passed through it.

The whole of these glands were much infiltrated with melanotic cancerous matter; the tracheal rings were ossified and also melanotic. The calibre of the larynx and trachea was reduced to a mere slit; the mucous membrane was of the colour of parchment and of the consistence of cartilage. Great abundance of the most fetid greenish-slate coloured granular fluid escaped from the tumour, which is patched all over with melanotic pigment.*

Now, considering the rarity of this disease in the human subject, and its still greater rarity in tropical climates, the above case may prove an interesting addition to our pathological records.

It will be observed that this tumour possessed all the marks of malignancy, viz., its progress was rapid and continuous; it was attended with cachexia; it implicated every tissue in its neighbourhood; it was broken up interiorly and proceeding to the surface; every gland in its vicinity was affected; it proved fatal, and its structure was heterologous.

Cause.—This poor man could give no cause whatever for the appearance of this tumour: his parents had no such disease; his diet and daily occupation were the same as those of others. He was certainly attacked with this disease at a period of life in which it is most generally observed.

Pain, which is so marked and pathognomonic a symptom, did not appear in this case to any extent. Indeed he only complained of pain when the soft fluctuating mass in front was pressed, notwithstanding the situation of the cancerous growth, inbedded as it was amongst the numerous nerves and vessels of the neck.

Treatment.—I need not say how little our art and science avail in this disease.

Caustics and extirpation may alone be relied on, and these only in the earliest stages of the appearance of the disease.

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* The tumour is sent to the Pathological Museum, Madras Medical College.

No. 13.—*Case of Abscess of the Lung, Simulating Abscess of the Liver.* By Surgeon Major W. Johnston, M.D., 17th Brigade, Royal Artillery.

[*Communicated by the Principal Inspector General, Medical Department.*]

Bombardier H. Gardiner, No. 2763, No. 4 Battery, 17th Brigade, R. A.

This patient came into hospital on the 11th of January 1862, complaining of feeling weak and unwell, and had a pain in left hypochondrium, in the vicinity of left lobe of the liver, unattended by fever, and the patient presented the appearance of having been drinking, but there was no nausea or vomiting or any headach. The pain in left hypochondrium steadily increased; the pulse acquired both fulness and strength, and there was fever.

On the 13th, thoracic symptoms showed themselves, and there were present pain and oppression in chest, dyspnœa and cough, but the fever abated.

On the 22nd, attention was again directed to the liver, but the pain, weight, and uneasiness complained of were confined to the left side of the thorax and abdomen, and, after a prolonged examination, an obscure, globular and somewhat firm tumour was found occupying the left hypochondrium resembling an hypertrophied spleen, and the right side was not at all complained of. The cough increased, but there was little or no expectoration.

On the 23rd of the same month, the patient was suddenly seized with a paroxysm of coughing, accompained by a copious expectoration of purulent matter mixed up with phlegm and mucus. Respiration became considerably embarrassed; large mucous râles over entire surface of left lung, and small crepitation. An abscess in left lobe of liver was thought to have burst through the left lung.

From this date the patient continued to expectorate variable quantities of pus, sometimes tinged with blood, and often copious; wearing away the strength and producing great prostration of the vital powers by keeping up a constant drain on the system which required to be combated by stimulants and nourishing diet. A perseverance in this method of treatment for about three months was followed by evident signs of amendment and convalescence. The wine and brandy were now discontinued.

On the 20th May, however, a severe relapse occurred, preceded by strong rigors and fever, with a repetition of the purulent discharge from the left lung, but this time the hepatic organ remained undisturbed. The stethoscopic signs were those of pleuro-bronchitis, and latterly those of a cavity or abscess in inferior lobe of left lung.

The patient did not rally but expired on the night of the 25th May, 1862.

Post-mortem Examination.—*Body,* generally not much emaciated, and there was a good deal of adipose deposit in areolar tissue of front of chest and anterior surface of abdomen.

Head not examined.

Thorax and Abdomen.—Disease confined to left thoracic region, the *right lung* being found healthy, but the *heart* was slightly enlarged and flabby in texture, and somewhat displaced from its natural position, being found pushed partially to the right side and towards the mesial line. *Left lung;* its base and posterior half of its substance, throughout its entire length, considerably disorganised by tubercular and purulent deposits and hepatization; its anterior half being more or less crepitant and healthy. Sections of it found to float freely in water. The circumference of base of left lung adherent to corresponding portion of diaphragm and capsule of left lobe of liver. There were also strong and extensive pleuritic adhesions to the posterior and lateral sides of thorax. A large irregular cavity or space existed between the diseased lung and pleura, occupying a posterior inferior aspect, containing but a small quantity of fetid, brownish, grumous pus, involving the parenchyma of the contiguous lung, communicating with its superior lobe, and discharging its contents through the ramifications of the bronchi on that side.

This abscess, however, had no connection whatever with the *liver* (as had been diagnosed during the life-time of deceased) nor did there appear traces of any antecedent formation of hepatic abscess.

All other organs were healthy.

No. 14.—*Cases of Fever.* By Surgeon Major W. Johnston, M. D., 17th Brigade, Royal Artillery.

[*Communicated by the Principal Inspector General Medical Department.*]

[The following letter accompanied the report of 1st case.]

To the Deputy Inspector General, of Hospitals,
P. D., Madras.

Sir,—I have the honor to forward a case copied from my hospital journal which, in my view, offers some points of interest sufficient to attract that of the Principal Inspector General, Medical Department, to whose notice I beg it may be submitted.

2. Contrary to received opinion as to the non-existence of typhoid fever in this country, it cannot now be questioned that, at all events of recent years, this disease has manifested itself in different localities widely separated from each other, while the records of the Artillery Hospital at this station contain well marked cases of this disease, and there is now to be added a case of *typhus fever* in which, together with the *maculæ*, *petechiæ* were interspersed.

I have, &c.,
(Signed) W. Johnston, M. D.,
Surgeon Major,
d. d. 17th Brigade Royal Artillery.

St. Thomas' Mount, 31*st May*, 1862.

Case I.

Driver John Luff, No. 6,705, 17th Brigade R. A., aged 23 years. Service 4 years.

26*th May*, 1862. Admitted complaining of having been frequently purged, the motions being liquid, bilious, and without blood or mucus, and voided with little pain, but some griping. No abdominal fulness exists, but dull pain in right hypochondrium exists extending into shoulder. Percussion indicates increased volume of liver while pressure is attended by pain. Pulse 96, of good strength ; skin of trunk and extremities covered by *eczema solare* while *acne rosacea* exists on forehead and face ; tongue moist.

The following was exhibited on admission.

℞ Hydrargyri c. Creta 3 iss.
Tinct. Opii. 3 iss.
,, Catechu. 3 iii.
Vini. Ipecac. 3 ii.
Mist. Creta Comp. ℥ viii. *Misce.*
Fiat Mist. ℥ iss. every fourth hour.
Fotus to the abdomen. Spoon diet.

Vespere.—Purging now ceased, but pyrexial symptoms preceded by slight chills set in about 4 o'clock. Pulse 110, of good strength.

Mist. Salin. Diaphoretic ℥ iss. every second hour.
Apply a blister to the epigastrium, for two hours.

27*th.*—Passed a restless night and had a recurrence of chills about 3 o'clock A. M., followed by pyrexia which still continues. With this is now to be superadded œdema of face, eyelids and forehead—parts which wear an erysipelatous blush. Pulse 96; pain less complained of in right hypochondriac region; thirst; anorexia.

Omit Medicamenta.

℞ Liq. Ammon. Acet. ℥ iv.
Vini. Ipecac. ℥ ss.
Potassæ Nitratis ʒ ii.
Sp. Etheris Nitrici. ʒ vi.
Mist. Camph. ℥ viii. *Misce.*
Fiat Mist. ℥ iss. every second hour.
Lemonade ad libitum.

Vespere.—Extension of erysipelatous inflammation to forehead. Is restless. Pulse 120, of good strength; had chills at noon; head shaved in the morning.

Omit the above Mixture.
Mist. Emetico Cathart. ℥ ii. every second hour.
Cold lotion to the head.

28*th.*—Extension of erysipelas checked and œdema of face less. But on trunk and extremities maculæ are present, the patches being somewhat livid. No recurrence of chills since appearance of maculæ. Pulse 110, of good strength; bowels have discharged several loose feculent motions; pain in right hypochondrium relieved.

Omit. Mist. Emetico Cathart.

Vespere.—Maculæ of a livid hue still distinct on trunk and extremities. No extension of erysipelatous eruption. Complains of headach; eyelids œdematous; pain in right iliac fossa, where there is some tumefaction complained of, increased on the slightest pressure. During the day had five or six loose dark coloured offensive evacuations. At

2 o'clock had slight rigors, and now there is heat of skin, increase of thirst. Pulse 110, full.

℞ Liq. Ammon. Acet. ℥ iii.
Sp. Ammon. Aromat. ʒ ii.
Vini. Ipecac. ʒ iii.
Sp. Etheris Nitrici. ʒ iii.
Mist. Camph. ℥ v. *Misce.*
Fiat. Mist. ℥ iss. every second hour.

℞ Sol. Morphiæ Hydrochlor. ʒ ss.
Liq. Ammon. Acet. ʒ iii.
Mist. Camph. ℥ iss. *Misce.*
Fiat Haust. at bed time.

Eight leeches followed by fomentation to be applied to the right iliac fossa.

29*th.*—Passed a good night. Pain in right iliac fossa, increased on pressure still exists, though not to such an extent as at last report. Has had two liquid, feculent, very offensive motions, voided without pain. Urine in large quantities; tongue moist, red at tip and edges; erysipelatous inflammation arrested; macular eruption less developed though still apparent. Pulse 120; skin moist.

Continue mixture as above.

Vespere.—Eruption which existed in the morning, apparently of the nature of vibices, disappeared about 2 o'clock P. M., soon after an attack of rigors. With the exception of some petchiæ on trunk and thighs, former eruption has quite disappeared. Anasarca was first remarked an hour ago. Urine in large quantities, limpid, neutral and free from albuminous matter, has a Sp. gr. of 1·001. Complains of frontal headach. Has been delirious, though he answers questions distinctly. Pupils so widely dilated that the irides are scarcely to be seen. Some cough and dulness in postero-inferior regions of both sides of chest. Pulse 120, jerking; tongue moist, dry in centre, red at tip and edges.

Omit Medicines.

Let eight leeches be applied to the temples.

℞ Potassæ Chloratis. ʒ i.
Acid. Hydrochlorici. Fort. ♏ xl.
Tinct. Digitalis ʒ ii.
Aquæ Font. ℥ xii. *Misce.*
Fiat Mist. ℥ iss. every second hour.

4 bottles Lemonade.
1 pint Mutton Soup.
1½ measures of Gin.

30th.—Passed a restless night with much muttering delirium. Slept one hour: at present he is calm and is rational in answers, complaining of headach, thirst, dyspnœa, and some cough. Pupils as at last report; no appearance of vibices and only some petechiæ on trunk and thighs. Erysipelatous eruption gone from face and scalp. Pulse 120, jerking; last night bowels opened once by castor oil and turpentine enema. Has voided only a little urine in bed.

Continue Mixture.
Cold douche to head every third hour.

4 *p. m.*—Continued as at last report until 3 P. M. when he suddenly left his cot struggling with his orderly until forcibly returned to his cot on which he lay and soon passed into a state of coma. On being seen a little after 5 o'clock the trachoid râle had set in with resulting death at 6¾ o'clock P. M.

Autopsy 14 hours after death.

External appearance.—Body stout, muscular and well-formed. Posterior depending parts of trunk of a mulberry colour from the accumulation of dark fluid blood in subcutaneous tissues.

Cranium.—Over vertex the dura mater is firmly adherent to the arachnoid membrane. The vessels of this last membrane are somewhat vascular, especially at base of brain where its meshes are somewhat opaque and thickened and contain a considerable quantity of hyaloid fluid. Serum in some quantity was contained in lateral and third ventricles. Brain throughout soft, especially towards the base presented some large points from which dark fluid blood exuded. This ramollissement was well marked in pons varolii and cerebellum.

Thorax.—No appreciable structural lesion in any of the thoracic viscera.

Abdomen.—Stomach distended by *post-mortem* flatus; apparently free from diseased action. In the small intestines patches of inflamed mucous membrane existed; these becoming more extensive lower down, till at the lower third they occupied the greater portion of the intestinal surface. Throughout this lower third the solitary glands are seen

large and elevated above the mucous membrane, their apices being in several places ulcerated. Still lower down or within 20 inches of the ileo-colic valve these appearances increase, and are associated with marked softening of the entire mucous coat which here and there presents patches of ulceration towards which minutely injected capillary vessels pass. In this latter situation Peyer's glands present distinct indications of inflammatory and ulcerative action, their centres being abraded as if scratched off exposing the submucous and muscular layers, while several of them have passed into ulceration. Similar changes are present in the large intestines, the glandulæ being enlarged, ulcerated and surrounded by patches of inflamed and softened mucous membrane towards whose circumference minutely injected vessels proceed.

Liver and other abdominal contents seemingly of normal structure.

Case II.

Regimental No. 6751. Name William Vale; age last birth-day 24 years; completed years of service two; station, St. Thomas' Mount; time on the station, eight months.

21*st June*, 1862.—Of strong habit of body and good constitution, habitually enjoying good health, till four or five days ago when without apparent cause he began to suffer from a general feeling of malaise with loss of appetite, headach horripilations alternating with slight febrile accession. These symptoms have steadily progressed, and, with the addition of some cough, nausea, and occasional vomiting, with griping and abdominal uneasiness, have led to his being brought to hospital on this date; the following being his condition. His countenance wearing a stupid vacant expression, and a weary dull look about the eyes; is somewhat livid as if from defective aëration of blood. There is much muscular debility and inability to stand. He complains of great languor, lassitude, debility, thirst, anorexia, with short dry cough, nausea and occasional vomiting with some abdominal uneasiness. Auscultation fails to detect any other morbid indication save an occasional sibilant and sonorant râle with a somewhat rougher respiratory murmur, posteriorly, than natural.

Abdominal pressure is borne without pain save in iliac fossæ, where it is complained of and where there is a *gar-*

gouillement. Tongue tremulous, with a thin yellow coating. On trunk and inside of thighs there are a few petechiæ, but no maculæ. Pulse 96, weak; skin hot, harsh and dry; thirst; anorexia; bowels bound.

Habeat 2nd q. q. hora Mist. Salinæ Diaph. ʒ iss. Fotus toto abdomini.

℞ Hyd. c̄ Creta gr. xii.
Pulv. Doveri gr. x.
Ft. Pulv. *h. s. s.*

22*nd.*—Passed a restless night. Headach much complained of, otherwise as on admission. Pulse 96, of good strength; pain in iliac fossæ still complained of. Hirudines x. part: abdomin dolent. Head to be shaved.

Hab. Statim Ol. Ricini ʒ i.

Vespere.—Pain in both iliac fossæ still complained of bowels not open; pulse 100, jerking. Hirudines iv. iliaci dex; postea fotus.

℞ Ol. Ricini ℥ ii.
Spt. Terebinth ℥ ss.
Assafœtida ʒ i.
Aqua *usque ad* ℥ xvi. *Misce.*
Fiat Enema Statim adhib.

℞ Quinæ Sulph. Hyd. Submur. āā gr. viii.
Pulv. Doveri gr. vi. M. ft. Pulv. *h. s. s.*

23*rd.*—Slept for two hours, but the pyrexia and other symptoms still persist. Bowels have not been moved by enema.

Habt. Statim Ol. Ricini. ℥ ss.

At 2 o'clock P. M. let the following mixture be given, viz.,

℞ Mist. Cinchonæ ℥ xii.
Acid Muriat. dil ʒ ii.

M. ft. Mist. cujus capeat cochlear ii. ampla. 3rd q. q. hora.

Vespere.—Bowels twice moved, grumous-looking matter like coffee grounds being expelled with some griping and increased abdominal pain. Chills with febrile accession; pulse 100, broad.

Cont. Mist. Cinchonæ.

24*th.*—Slept well; skin soft, perspirable; petechiæ still apparent on trunk and inside of thighs; bowels not open; gurgling in right iliac fossa where there is some pain on pres-

sure ; tongue moist, red at tip and edges ; countenance indicative of despondency, is slightly livid, as are lips ; cough gone ; urine scanty and high colored ; pulse 98, of good strength.

Cont. Mist. Cinchonæ ; ℥ Acid. Nitro-muriat.

Vespere.—No change since last report, save that he has had nausea with some abdominal uneasiness. Petechiæ less apparent ; pain in iliac fossæ gone ; tongue cleaning ; bowels not open ; pulse 86, of good strength.

Rept. Calomel, Quinæ et Pulv. Doveri *h. s. s.*

c. m. Ol. Ricini. ʒ iss.

25*th.*—Passed a good night and feels much better. Countenance more natural and less livid ; bowels several times open, motions more natural.

Interim Omit. Mist. Cinchonæ till 2 P.M. when let it be re-commenced.

Vespere.—Bowels once open, the motion being dark grumous as if the debris of blood, no abdominal pain, but there is fulness and deep seated uneasiness in right iliac region ; petechiæ on trunk with one macula of mulberry hue ; pulse 86, weak ; countenance depressed ; only complains of debility ; turpentine stupes to belly.

℞ Quinæ Sulph. gr. x.
Pulv. Doveri gr. viii. M. ft. Pulv. *h. s. s.*

26*th.*—Passed a good night ; pulse 76, weak ; countenance more natural ; bowels not open ; tongue cleaning ; skin moist ; petechiæ very indistinct.

Spoon diet. Wine two measures.
℞ Quinæ Sulph. ℈ ii.
Pulv. Capsici gr. xii.
Pulv. Doveri gr. xviii.
Ext. Gent. ℈ i.
Divid. in pil xviii. Sumat ii. 3rd q. q. hora.

Vespere.—Feels much better, and only complains of debility. Petechiæ gone ; tongue moist ; bowels not open.

Cont. Pil et Pulv. *h. s.*

c. m. Capeat Ol. Ricini ℥ ss.

27*th.*—Convalescent. Cont. Medicament. Spoon diet. Cont. wine.

28*th.*—Only complains of debility.

30*th.*—General health good ; functions natural.
Cont.

3*rd July.*—General health good ; functions natural. Discharged.

No. 15.—*On the Poisonous Effects of Santonine.*
By W. N. CHIPPERFIELD, Staff Assistant Surgeon, Madras.

"It should be remembered that Santonine is an active poison, and therefore requires cautious administration, especially to children."

Adverting to this sentence which appeared on page 82, Vol. II. of this Journal, I have now to give the outline of a case in which the poisonous effects of Santonine came directly under my notice.

On the 5th of June last, I was requested to prescribe for a native female, aged 13 years. She was a very delicate girl and had, for several years, occasionally passed ascarides lumbricoides. Santonine had been exhibited three or four times with very good effect. She was much emaciated, had a capricious appetite, and complained of a "twisting" pain in the abdomen.

I prescribed a ferruginous tonic to be taken twice a day ; three grains of Santonine to be given in three drachms of castor oil on the following morning.

In the evening of that day, June 6th, I was hurriedly summoned to her, the messenger stating that she was dying.

I found her unable to raise hand or foot, almost insensible, but capable of being roused and of answering questions, which she did in a languid manner and in a very weak voice, and immediately relapsed into a semi-comatose condition. The pulse was almost imperceptible, just a fluttering thrill of the artery could be felt. Upon auscultating the heart, its action was found to be very rapid and feeble, but the sounds were much marked by loud mucous râles audible all over the chest. The corneæ were with difficulty brought into view, on account of their being turned upwards and inwards ; but when a sight of the pupils was obtained, they were found to be so much dilated that the irides were scarcely visible.

She said she had no pain, but a great præcordial oppression and a fluttering at the epigastrium ; that she was so

giddy, everything appeared to be dancing around her; and that, although she could see nothing distinctly, all objects had a green hue.

I learnt that she had had four or five loose motions, with the first of which, it was believed, a small worm was passed; that she had vomited once, and had so much nausea that she had taken no food all day; and that her urine was scanty and of an intense yellow colour.

I had a medicine chest with me and immediately administered the following draught.

℞. Spirit. Ammon. Aromat. ♏ xx.
Tinct. Lavandulæ Co. ♏ xv.
Spirit. Etheris Nitric. ʒ ss.
Aquæ ℥ i. M. Ft. Haustus.

She had some difficulty in swallowing the draught, but in a few minutes I found the pulse improved.

I directed sinapisms to be applied to the nape of the neck and to the epigastrium, and a hot pediluvium, with mustard, to be used directly; a draught as above to be given every hour until completely aroused; and a cup of good chicken soup to be given every third hour.

I saw her again early the following morning. She was still a little giddy, and very weak, but the pulse was firmer and more steady, and she said she felt much better. The coloration of objects had disappeared.

On the subsequent day, June 8th, she was convalescent so far as regards these symptoms.

It may perhaps be said that the evidence of poisoning, in this case, is of the very slightest, and that the symptoms observed were nothing more than what would happen in a delicate child exhausted by tolerably free purgation and want of nourishment. But we had here, (in addition to the signs of exhaustion) very widely dilated pupils, a very great amount of vertigo, and distinct coloration of both vision and urine—known results of the ingestion of Santonine, and quite sufficient, in my opinion, to warrant me in attributing the whole train of symptoms to the effects of the drug, and in applying the word *poisonous* to these effects.

A little previous to the occurrence of this case, I saw an instance in which the poisonous effects of Santonine were manifested, but in a very much slighter degree.

A European child, a robust little boy aged five years,

took three grains of Santonine in sugar in bed time. Soon afterwards he fell asleep, but awoke in about half-an-hour, got out of bed, and with the most uproarious mirth rushed into the room where his parents were taking dinner. His head was very hot, and his pupils were widely dilated; he appeared a good deal excited, and asked for wine, which was refused him. He was desired to go to bed again which he did, but he could not sleep and said the cot kept dancing with him. He became still more excited, related humorous and fanciful anecdotes, laughed loudly, and at last retired to rest with his mother. As soon as he lay down he declared the cots and the room were going round with him, that his mother had turned into a green woman, that the sheets were green, and the walls were green. He became a little fractious and complained of great thirst. After drinking a quantity of iced water he fell asleep. During the night he was much disturbed by dreams and awoke several times and asked for water. In the morning he was quite well. A dose of Senna was given him, but he passed no worms.

Since the above was written, my friend Dr. Montgomery has drawn my attention to a case reported in the London Medical Review, July, 1862, which I here quote.

"**Poisoning with Santonine.**—Dr. Lohrman records a case in which a mother gave to her child, who was about three years old, and in good health, about a grain of Santonine, in five lozenges, for the purpose of destroying ascarides. In quarter of an hour the child was seized with violent convulsions. M. Lohrman saw the child three quarters of an hour later; it was unconscious, with hot head, puffed and congested face, eyes rolling convulsively, pupils enormously dilated and insensible to light, foam at the mouth, clenched teeth, respiration attended with râles, convulsive shudderings of the upper extremities. An emetic was given (without effect), a leech was applied to the temple, fomentations to the head, an enema with vinegar, and 'huile de baldriane,' a mustard-poultice to the chest. In about three hours consciousness began gradually to return, soon afterwards the convulsive clenching of the jaws ceased. On the next morning the cure was complete.—*Jour. de Chim. Med. Fevrier* 1862."

I have related these cases not with any desire of deterring practitioners from the use of Santonine, but merely to show that the drug is not one which may be indiscriminately exhibited, or looked upon as a domestic remedy which may be used without caution. I am satisfied that no more effectual vermifuge exists, especially as concerns the lumbricoid ascaris.

It is unnecessary to multiply instances of its efficacy, as every one who has used it must be fully satisfied upon this point; but Dr. Montgomery has placed in my hands the following statement, which was furnished to him by the father of the children whose cases are related, and which I take this opportunity of making public.

"John C., aged 5½ years, took four grains of Santonine, followed by a dose of oil, at 8 o'clock on the morning of the 22nd of April, and had five motions; the first at about half past nine, which produced no worms; the second about half an hour after, which brought away over thirty worms measuring from four to nine inches in length, and the greater portion alive. During this motion he complained of much pain in the belly. Third to fifth motions, about one hour apart, and on each occasion produced four worms, all alive, but no pain.

"William C., aged 7 years, took four grains of Santonine two days afterwards, but brought away no worms, although his bowels were freely opened. The following morning at about eleven o'clock he complained of pain in the belly, went to stool and brought away thirty-five worms all dead and none less than six inches in length. During the day he had two other motions, passing each time ten or twelve; on the following day also he passed several.

"Alice C., aged 2½ years, took two grains of Santonine the same day as William with the same effect, producing no worms until the following day about twelve o'clock, when she brought away about thirty-five, and about twenty-five more during the day, and five or six again on the following day. The whole were from four to eight inches long, about half of which were alive. She did not complain of any pain during the motions."

No. 16.—*Detailed report of a Fatal Case of Tuberculosis occurring in a man of the No. 5 Battery, 23rd Brigade Royal Artillery.* By Assistant Surgeon PEARL, in Medical Charge.

11*th May*, 1862.—Serjeant W. Keegan, Æt. 38, a well made man with rather a pale anæmic appearance, admitted into hospital under the head of Contusion. States that two months ago he had a fall from his horse alighting on his left

shoulder, he had not much pain at the time, but has since suffered occasionally from pain, in the left clavicle at its junction with the sternum. Twelve days ago he first perceived a swelling commencing near the insertion of the sterno-cleido-mastoideus muscle—this gradually spread outwards until it attained its present size. There is now a globular elastic tumor of the size of an orange situated above the inner third of the left clavicle, it is elastic and appears to contain water; no signs of pulsation, though the subclavian is heard distinctly pulsating beneath.

General health good. There is no pain or discoloration of the skin, and he allows the tumor to be handled freely.

Discussion was attempted by means of iodine and afterwards pressure without any effect.

On June 4th is the following note—"The tumor was punctured to-day with an exploring needle and some bloody serum oozed out, it was then tapped with a small trochar and about three ounces of dark brown serum drawn off. Tinct. Iodine (one part to two of water) was afterwards injected."

On the next day the tumor which had almost completely disappeared, was very much inflamed; the surrounding parts hot and painful; suppuration ensued which was relieved by incisions, and poultices. He continued to improve until the 22nd, when a pad and bandage were applied; these were soon discontinued on account of the pain.

On the 27th, it is reported—"Last night was suddenly seized with increase of pain and difficulty of breathing, the tumor apparently extending inwardly towards the throat; is very weak, and complains of pain all over the chest and neck, with a feeling of lumps or projections in the throat, causing difficulty in swallowing; pulse 82, weak. Fetid discharge from the original puncture continues."

Bark and ammonia were then given with beef-tea and sherry. The discharge from the tumor continued copious until the 4th, when a director was introduced and the tumor laid open with a bistoury, no matter was evacuated; pain in the chest and throat continued very severe.

On July 7th, sloughing commenced at the opening of the tumor and collections of matter continued to form around, which were opened as they appeared. Charcoal poultices were applied, and tonics and nourishment given.

The suppuration however continued profuse and the edges of the wound presented an unhealthy fungous appearance.

The uneasiness in the chest and difficulty of breathing entirely passed away until the 26th when he had an attack of rigors in the night. On the 30th he first spat up some purulent matter and the next day the discharge from the wound diminished as the expectoration increased and air passed freely when he coughed.

From this time he gradually got weaker. Brandy and beef-tea were freely given, but he gradually sunk and expired on the 12th August at 11 A. M.

Post-mortem appearance five hours after death.

Body very much emaciated, great discoloration of dependant parts.

Chest.—Above the left clavicle is seen a large sloughing fungous looking mass with an opening in the centre, admitting a probe to penetrate the lung. On cutting through the mass it is found to be soft and friable, with several patches of tubercular matter scattered throughout it. Behind the junction of the clavicle and sternum, lying in close apposition with the great vessels of the neck, was found an oval tumor about two inches long and one in diameter, this was surrounded with a membranous cyst and contained fully formed tuberculous matter of the consistence and appearance of Dutch cheese. Examined under the microscope this was found to consist of granular corpuscles, somewhat larger than pus globules, some angular, but mostly of a circular form—no distinct nucleus, not even when treated with acetic acid; numerous oil globules and granular patches were also present as well as a few square laminated crystals having the appearance of cholesterine.

The diseased mass communicated by an aperture through the deep cervical fascia with a vomica in the upper part of left lung. No disease whatever of clavicle or sternum. On opening the chest the left lung was found full of vomicæ, one, in the upper part communicating with the tumor, as large as an apple; patches of tubercular matter scattered throughout the lung. The right lung was crepitant throughout, no appearance of tubercle.

Heart normal, left auricle filled with florid blood.

Liver rather large, pale, and soft, easily broken between the fingers, no deposit.

Intestines and kidneys healthy.

Brain, not examined.

Observations.—It would appear from the above case that tuberculous matter must have been deposited sometime ago in the glands of the neck, and this is further corroborated by the statement of his comrades who own that he has had a swelling in the neck for two or three years but would never show it, this matter which was in a quiescent state must have been roused into activity by the fall he had from his horse, and further aggravated by the injection of the iodine. The lungs were undoubtedly healthy at first as no abnormal sounds were heard with the stethoscope on his admission. The whole of the left lung must have become rapidly diseased immediately after the tumor opened into it, for previous to that period he had no cough or expectoration, and the right lung was found perfectly healthy.

No. 17.—*Surgical Cases from the Triplicane Hospital, Madras.* Treated by Surgeon Major PORTEOUS and Native Surgeon MOODEEN SHERIFF. (Reported by the latter).

(*With an Illustration.*)

FIBROUS TUMOR.

Homeeda Bee, Female, Æt. 40.

21*st April* 1862.—Admitted this morning into Triplicane Hospital with a large tumor in the right pectoral region, measuring around its circumference 26 inches. In some portions the tumor is nodulated and as hard as cartilage, and in others smooth and elastic: it has an extensive ulcerated surface, surrounded with cauliflower excrescences, in the centre of which there is a dark grumous appearance with numerous gangrenous shreds. It is freely moveable and evidently has no deep attachment, and the integument covering it is also loose, except over the nodulated portions, where it appears to be adherent. The discharge from the ulcer is very offensive, so much so, that it keeps the patient herself always in a state of nausea, and obliges her to reject almost every meal she takes.

She complains of some pain and great inconvenience from the weight and size of the tumor; suffers from febrile

attacks, and is much debilitated. Skin harsh and dry, bowels regular, and tongue pretty clean. There is no enlargement of any axillary or cervical glands.

History.—The patient is a mother of two children, the last of whom is about six years old; she seems to have been a healthy woman previous to the growth of the tumor, and that her catamenial discharge has been very regular. Four or five years ago a small round swelling made its appearance in the right mammary region, which became a little flat as it increased in size, was very moveable, and her friends and hakeems considered it to be an enlarged gland. It has since gradually enlarged, and last year about this time the tumor was about half its present size, when she was advised by me to have it removed at once before it ulcerated. She did not consent to this, but resorted to native remedies, under the use of which it began to increase rapidly and became painful. Twenty days before her present admission a small portion of the integument, in the most depending part of the tumor, became ulcerated from some native application, and it has since extended rapidly to the extent described above.

The photographic likeness of the tumor, previous to its removal, is shown in Fig. I., Plate V.

6th May.—Mr. Porteous removed the tumor this morning, assisted by Dr. Montgomery, Mr. Cornish, and myself. The patient having been brought under the influence of chloroform, Mr. Porteous made an incision at the upper part of the tumor from its base to the edge of the ulceration, dissected the covering to some extent, and then separated the tumor from its cellular connection; chiefly by the fingers. The time occupied by the operation was about 7 minutes, the amount of blood lost during its performance was inconsiderable, and only one artery was ligatured. The mammary gland was adherent to the inner covering, compressed and contracted to a very small size, but was quite entire and unconnected with the tumor. The edges of the flaps were cut around and the dressing of the wound postponed till the afternoon to allow the latter to contract.

The weight of the tumor was 5 lbs., and it was entirely of fibrous texture, with two or three cavities or cysts, lined with a secreting membrane and filled partly with a glairy yellowish fluid.

Vesp.—The edges were brought together by twisted

sutures and straps, and a wet compress was applied over all.

1*st May.*—The wound is healing by granulation.

1*st June.*—Nearly well.

27*th.*—Discharged.

Remarks.—Besides the large size of the tumor the most interesting point in this case is, that great care was taken when the operation was performed to keep the nipple and mammary gland untouched, and during the after treatment to place them in such position so as to make them correspond with those on the opposite side as nearly as possible. How far this object was accomplished will be seen by the Fig. II. in Plate V,, which is the photograph of the patient taken a few days before her dismissal from the hospital, and about two months after the operation.

GLANDULAR TUMOR.

In the month of July 1859, I had under my treatment a remarkable case of glandular affection in a scrofulous woman, named "Khumroo Bee," who was about 20 years old. One of the lymphatic glands on the right side of her chest was so enlarged and ulcerated as to resemble a scirrhus of the mammary gland. I was called upon to see this case on the 10th of that month, when, on examining the tumor, it appeared to have originated from the upper part of the breast. It was hard, immoveable, and so large as to occupy the whole of the upper portion of the right side of the chest, and there was an excavated ulcer in its centre with an irregular and inducated edge. The discharge was pretty copious, and she complained of constant dull and deep seated pain in the parts. The glands in the right axilla were much enlarged and irritable, and those of the left armpit and neck were only slightly affected.

According to the accounts of her parents, the tumor was about 15 years' duration, having made its appearance in shape of a small round swelling in the 5th year of her age; and it had been stationary during the whole of that period, except the last two years, at the beginning of which, it had commenced to increase and gradually attained the size described above. It had ulcerated about six months before my visit, during which time several native remedies were tried without the least benefit.

Fig. 1

Fig. 1

On stone by J. Suares from a Photograph by A. Hunter M.D.

Lith: by J. Dunphy, Govt. Lith. Press, D.P.W. Chepauk. 1862.

Being acquainted with a case of deceased mammary gland cured by excision under my care a few months previously, when the operation was performed in the patient's own quarters, Khumroo Bee and her friends gave their consent readily to any measure I might adopt for her permanent relief, and she was accordingly operated on in her own house on the 12th July, with the assistance of Mr. Assistant Apothecary G. A. Trutwein of the Triplicane Dispensary.*

Having brought the patient under the influence of chloroform, while she was placed on a cot in a recumbent posture with the arm extended, I made two curved incisions through the integument, so as to include the whole of the ulcerated and diseased parts, and dissected out the tumor in the usual manner. After its removal the tumor was about the size and shape of a very large goose's egg, consisting entirely of one gland, filled with about 6 or 7 drahms of thick purulant matter, and although it had encroached much upon the upper part of the mammary gland, yet there was no connection whatever between the two. One artery was secured, and I then extended the upper end of the wound to the axilla by an incision, and removed after the manner of Fergusson† about a dozen of smaller glands, varying in size from a pigeon's egg to a large pea. Eight of these were also found to contain more or less of the thick matter in their centre. There were a few more enlarged glands still remaining in the axilla, but they were so deeply embedded near the axillary artery that I did not think it safe to dissect them out. The wound was closed with sutures and straps, &c.

On the 4th day after the operation I removed the sutures and found the wound united only in its lower half by the first intention, the upper half being filled with the sloughing cellular tissue.

The sloughs were removed and the wound was dressed daily with warm dressing till it was well at the end of the following month (August.)

Remarks.—Enlargement of lymphatic glands is one of the most common affections that persons of strumous habits are subject to, but the size the gland had attained in this

* The prejudice of Gosha among the *rich* and *respectable* Musselmen is so great, that their females would rather die from a disease than be taken to any Institution for its removal, and, therefore, it was not till I agreed to operate in their own quarters that I have been able to prevail on some of those in Triplicane to undergo surgical operations. My thanks are due to Mr. Trutwein for his assistance in this, as well as in a few other capital operations.

† Practical Surgery. 2nd Ed., p. 228.

case is not of common occurrence. I have seen many cases of enlarged glands in the neck, axilla, and groin, but do not remember one, in which the enlargement was half so large as in this instance.

It is remarkable to observe that the gland which was so unusually enlarged was one of those of the pectoral region, which generally show no tendency to any enlargement; and, so is also the fact of its remaining quite entire during the whole protracted course of the disease, 15 years, while it had suppurated in its centre, containing about 7 drachms of pus; and had given rise to the ulceration of integument and other surrounding soft tissues, from the pressure of its size. Pus was also contained in eight other glands removed from the axilla, which were likewise entire in their circumference, and it may therefore be inferred that when suppuration occurs in the substance of these little organs it generally begins at their centre.

The hardness, immobility, and seat of the tumor taken in connexion with the affection of the axillary and cervical glands, were well calculated to raise the suspicion of malignancy in this case; and although the simple nature of the disease was quite revealed after its removal, yet, it is necessary to mention here, for the sake of rendering this point more clear, that the patient has, since the operation was performed, enjoyed a perfect immunity from all morbid growths, with the exception of some lymphatic glands, which still continue to enlarge, showing, that their enlargement was not owing to the tumor, but to the scrofulous constitution in common with that of the tumor itself.

With regard to the operation, there is nothing worthy of notice, except that the removal of the enlarged and irritable glands from the right axilla was quite necessary in this case; and that an amount of precaution and patience was required for their dissection on account of their vicinity to large blood vessels and veins. I am fully convinced of the truth of Professor Fergusson's remarks that—"These proceedings in the axilla are almost invariably attended with more trouble than the other steps of the operation."

No. 18.—*Severe Wound of Chest in a Native.—Recovery.*
By Assistant Apothecary J. J. Wood.

While I was in Medical charge of a detachment of Native Infantry, at a small cantonment called Malleapooram on the Malabar Coast, a native a Chermah by caste, was brought

to me from some neighbouring village. He had great œdema of the epigastrium, umbilical region, and both hypochondria. On examination, there was found a large abscess extending from over the epigastrium to a small irregular wound situated over one of the false ribs at the left side. By manipulation, a hard moveable body could be felt within the abscess.

The history of the case was as follows:—the patient about three* days before fell from a tree on a fence made of thick bamboos, when a piece of the bamboo entered in the situation of the wound above mentioned: the foreign body was not extracted, and the wound was sealed up with some native medicine. He took no solid food from the time of the accident till the time he was brought to me, and scarcely any conjee or drink, as they increased his sufferings by distending his stomach. He was consequently very much emaciated and weak.

After the administration of a large glass of brandy and water, a crucial incision was made over the situation of the hard body in the centre of the epigastrium: about six or eight ounces of pus escaped; a probe was passed in, which grated against something hard and rough, and which was brought away by the aid of forceps with little difficulty. It proved to be a piece of bamboo, $3\frac{3}{4}$ inches in length and $\frac{1}{2}$ an inch in diameter.

He was placed at once on a generous diet with stimulants: anodynes were administered for a few nights, with an occasional aperient. Pressure was applied over the centre of the abscess, while the wounds were dressed with poultices.

Considerable quantities of pus were discharged for about a month, but these gradually became less, and the wounds healed in about two months after his admission.

Remarks.—I do not think that this case calls for remarks of any length.

It is evident that the bamboo, *fortunately*, struck over a rib, and, entering obliquely, lodged in the muscular parietes, partly of the chest and partly of the abdomen.

The rib here was evidently the first—in fact, the principal—element in the saving of the man's life; for had the foreign substance entered between any two ribs, the results would certainly have been much more serious.

Had this accident occurred to a full-blooded European, and had the foreign body been removed *even immediately*

* More probably a week.—J. J. W.

after the accident, with what anxiety would the Surgeon have watched for the first symptoms of pleuritis, peritonitis, or possibly both! And in any case, whether of a European or a Native, more particularly the latter, would not the idea of the possibility of tetanus have flashed across our mind, while calculating the chances of his patient's recovery? Yet, in this case, there was not even a *threatening* of any of these complications. And this appears to me to be the most remarkable point in the progress of the case. There was evidently no more inflamation set up than was barely necessary to envelope the foreign body in pus in order to promote its ultimate extrusion. But there is little doubt but that he would have sunk from hectic, had the case been left to itself.

I may add that this is only one of a number of cases shewing the amount of injury which a native of this country may sustain, and recover from, without the supervention of any of those formidable inflamatory complications so constantly witnessed among Europeans.

And though the dark-skinned races are, according to the highest professional authorities of the day, more liable to attacks of tetanus than their fairer brethren, yet how frequently do we see some of the worst subjects among them escape this formidable affection, even after injuries of a graver nature than the one detailed above.

No. 19.—*Case of Arsenical Poisoning from room paper.*
By J. SHORTT, M.D., Zillah Surgeon, Chingleput, &c.

The fashion of papering the walls and often the ceilings of houses in India is now becoming very general, and is an advantage no doubt; but may I be permitted in these pages to draw the attention of house proprietors to the pernicious influence exercised on the health of tenants by the use of green paper? It is a fact now too well established, that green coloring matter contains a large amount of arsenic which seriously injures not only the robust but more particularly those in delicate health. Facts to substantiate the above are found in almost every number of the "Lancet,"* but the following case which came under my own observation at this place is conclusive.

* Vide Vol. I., No. 18, dated 3rd May 1862, p. 472. No. 19, May 10th, 1862, p. 499. No. 23, June 7th, 1862, p. 598. No. 26, June 28th, p. 621; and Vol. II., No. 1, July 5th, 1862, p. 22.

The only papered house at this station has its sitting and dining rooms communicating by an open arch, intended when required to be separated by a screen : these two rooms are the only ones papered with green paper.

The house faces the north, and the wings on either side are completely shut in by buildings on the south, in consequence of which the southerly breeze is entirely kept out of the bed-rooms.

During the extreme heat of the weather in July last, the gentleman occupying the house slept in the sitting room for a few nights. He soon found that although he slept well, he awoke unrefreshed with a feeling of malaise, nausea, loss of appetite, diarrhœa, and sometimes syncope, &c., thoroughly unfitting him for his work ; but towards evening this feeling gradually passed away and he felt better. These symptoms continuing for a few days he sought medical advice, and Mr. Apothecary Matthews, who was acting during my absence from the station was called in. Suspecting that there was something wrong in the room, he directed the patient not to sleep there.

No sooner was this room given up than the patient immediately felt better, at least the most prominent symptoms disappeared. The diarrhœa and tendency to syncope continuing persistent called for the use of tonics and astringents.

The paper in the sitting room has an apple green ground, on which are large dark green flock leaves, the dust of which can be easily rubbed off by the finger, and that these symptoms arose from arsenical poisoning, there can be no doubt ; for on scraping off a small quantity of the dust and submitting it to *Reinch's* test, large quantities of arsenic were found to exist. Not satisfied with my own examination of it, I sent some to Mr. Harvey, Assistant to the Professor of Chemistry at the Medical College, Madras. Mr. Harvey writes, "Arsenic in pretty good quantities was detected in the paper you sent."

I consider it a duty I owe to the public to call immediate attention to this fact, the more so when I remember pointing out to the proprietor the evils likely to ensue from the use of green paper, when the house was being papered some four or five years ago.

Meteorological Results *from the Madras Observatory Register, for the month of July,* 1862.

1862.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometer. Observed Extremes. Max.	Min.	Daily Means. Dry.	Wet.	Wind. Prevailing Direction.	Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·689	97·8	81·5	87·9	76·1	S. S. W.	168	.....	Cloudy.
2nd	·736	100·9	81·8	86·8	77·2	Variable.	164	.....	Fine morning. Cloudy afternoon.
3rd	·738	97·8	80·7	86·9	78·7	S. S. W.	142	0·020	Cloudy. Shower just past noon.
4th	·718	99·7	82·2	85·1	78·1	S. S. W.	154	·231	Cloudy. Rain from 1½ to 5 P. M.
5th	·673	98·9	79·7	87·0	78·7	S. W.	148	·057	Chiefly overcast. Rain after 10½ P.M.
6th	·671	99·4	79·9	88·4	76·2	W. S. W.	173	.....	Overcast.
7th	·684	97·4	77·3	83·6	76·2	S. W.	143	1·129	Overcast. Rain from 5 to 9 P. M.
8th	·699	96·1	76·8	84·8	78·0	S. S. W.	163	·025	Cloudy. Shower about 0-15 A. M.
9th	·704	95·2	78·9	84·2	78·7	S. W.	153	.....	Overcast. [P. M., and midnight.
10th	·729	95·6	75·3	80·9	75·8	Variable.	164	1·895	Overcast. Heavy rain between 6
11th	·688	95·8	73·8	82·2	77·7	S. S. W.	189	·858	Stormy. Rain at 5 and 8 P. M.
12th	·671	94·5	74·9	85·2	77·7	S. W.	155	.....	Cloudy.
13th	·721	98·7	78·9	86·8	78·6	S. W.	171	.....	Light clouds.
14th	·701	99·7	80·5	86·2	80·3	S. W.	183	.....	Do.
15th	·659	96·9	79·7	85·6	78·6	Variable.	185	.....	Occasional clouds.
16th	·692	98·0	80·5	86·5	79·7	S.	176	.....	Nearly fine.
17th	·674	97·9	80·0	84·4	79·6	S. W.	166	.....	Heavy clouds.
18th	·704	96·7	80·7	86·0	78·2	SW&SE	164	.....	Light clouds.
19th	·712	99·1	80·7	86·9	79·5	S. S. W.	177	.....	Do.
20th	·713	98·3	80·9	85·9	80·2	S. S. W.	180	.....	Hazy.
21st	·689	100·3	80·7	85·7	81·1	Variable.	181	·250	Cloudy. Rain about 7 P. M.
22nd	.660	99·9	79·7	86·8	79·7	S&WSW	177	.....	Light clouds.
23rd	·667	100·2	82·4	86·7	78·1	SW&SE	180	.....	Cloudy.
24th	·689	99·9	81·7	86·6	77·6	WSW&SE	161	.....	Light clouds.
25th	·681	98·6	82·5	85·5	76·4	SW&SE	173	.....	Overcast.
26th	·665	98·9	79·2	85·8	77·1	W.&S.E.	152	.....	Hazy and dull.
27th	·658	99·8	80·9	87·4	75·9	WSW&S	158	.....	Cloudy.
28th	·684	101·2	81·9	87·0	77·5	WSW & SSE	177	.....	Light clouds.
29th	·711	100·0	81·9	86·3	77·6	WSW&SE	167	.....	Fine.
30th	·713	94·9	78·9	84·9	77·9	SW&SE	149	·050	Overcast. Shower about sun rise.
31st	·773	87·7	77·0	80·7	75·9	Variable.	136	.....	Overcast.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of August,* 1862.

1862.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometer. Observed Extremes. Maxm.	Minim.	Daily means. Dry.	Wet.	Wind. Prevailing Direction.	Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·793	90·9	77·5	83·0	77·9	SW & SSE	119	0·133	Overcast. Rain about 1 P. M.
2nd	·775	97·1	78·8	86·6	78·2	S.&WNW.	132	.....	Light clouds.
3rd	·757	95·4	80·7	85·8	77·3	S&WNW	152	.....	Overcast.
4th	·780	85·2	71·2	79·2	76·2	W. S. W.	104	2·300	Rain until sunrise.
5th	·776	91·9	77·7	83·8	78·6	S. W.	113	·144	Cloudy. Shower about 6 A. M.
6th	·728	91·7	77·5	83·8	77·1	W. S. W.	131	.....	Overcast.
7th	·699	89·1	76·7	83·3	76·0	S. W.	107	.....	Do.
8th	·685	92·5	78·2	82·1	74·2	W. S. W.	198	·022	Do.
9th	·660	93·1	77·2	83·2	74·7	W. S. W.	194	·009	Overcast. Shower about 9½ P. M.
10th	·665	92·5	78·7	81·1	75·3	W. S. W.	147	·218	Overcast. Rain after 8½ P. M.
11th	·686	94·7	76·8	78·1	76·4	W. S. W.	122	·904	Overcast. Drizzle till Sunrise. Heavy rain about 4 P. M.
12th	·656	93·7	76·9	83·7	77·9	S. W.	149	.....	Chiefly overcast.
13th	·690	95·3	77·2	83·6	77·9	S. S. W.	170	·002	Cloudy.
14th	·761	97·5	76·7	84·5	77·6	S. S. W.	160	·015	Light clouds. Shower about 7¼ P.M.
15th	·785	97·9	77·9	86·0	76·2	Variable.	147	·044	Cloudy. Shower about 7¾ P. M.
16th	·761	92·6	79·7	85·0	74·5	S. S. W.	155	.....	Chiefly overcast.
17th	·732	95·2	78·9	85·3	75·0	W. S. W.	181	.....	Overcast.
18th	·701	96·3	79·1	84·0	75·7	S. W.	174	·010	Nearly overcast:
19th	·715	97·2	78·1	83·6	75·8	S. S. W.	198	.....	Light clouds.
20th	·743	95·9	78·9	83·4	76·2	S. S. W.	157	.....	Cloudy.
21st	·755	94·9	79·2	84·6	75·5	S.	158	·022	Light clouds. Shower at 7 P. M.
22nd	·792	92·7	74·3	82·2	78·1	S. S. W.	172	·562	Rain before 4 A. M. Nearly fine after.
23rd	·780	92·9	76·2	83·5	78·1	S. S. W.	187	.....	Fine. [sunrise.
24th	·796	91·1	77·7	83·6	77·7	S. S. W.	196	·008	Nearly fine. Light showers before
25th	·773	97·0	78·7	84·5	77·8	S. S. W.	159	.....	Nearly fine.
26th	·772	97·1	80·1	84·8	78·5	S. S. W.	162	·055	Cloudy. Shower at 1¾ A. M.
27th	·773	96·9	79·7	85·5	76·7	Variable.	154	.....	Light clouds.
28th	·756	94·2	77·7	84·9	77·1	S. S. W.	144	.....	Passing clouds.
29th	·753	95·0	77·9	85·2	77·5	S. S. W.	174	·028	Cloudy. Shower at 11¼ P. M.
30th	·771	97·7	74·1	83·0	77·7	S. W.	195	.....	Cloudy.
31st	·788	95·0	76·0	82·1	77·5	S. S. W.	167	·047	Cloudy. Rain at 3¾ P. M.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P. M., and 10 P. M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of September,* 1862.

1862.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometer. Observed Extremes. Maxm.	Minm.	Daily Means. Dry.	Wet.	Wind. Prevailing Direction.	Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·777	92·5	76·7	84·2	76·9	Variable.	151	.....	Cloudy.
2nd	·749	94·4	78·5	85·5	76·9	Variable.	140	.....	Do.
3rd	·761	89·9	78·5	83·4	75·7	W. S. W.	96	.....	Overcast.
4th	·727	93·4	79·7	84·5	76·8	S. S. W.	109	.....	Do.
5th	·747	96·2	77·9	83·6	77·4	S. S. W.	142	.....	Passing clouds.
6th	·763	90·1	77·5	83·6	76·8	S. S. W.	104	0·570	Light clouds. Rain at 2 A. M.
7th	·766	90·7	77·2	84·3	78·0	S. S. E.	129	.....	Nearly fine.
8th	·764	90·5	81·2	84·8	78·8	S. S. E.	125	.....	Hazy.
9th	·718	92·1	78·7	85·5	78·5	S. S. E.	119	.....	Fine.
10th	·694	93·6	79·7	85·8	78·3	Variable.	138	.....	Nearly fine.
11th	·690	91·8	77·7	84·4	79 0	Variable.	102	·035	Light clouds. Shower about 5. A. M.
12th	·707	92·7	77·7	85·6	78·5	Variable.	79	.....	Cloudy. [about noon.
13th	·706	92·4	78·7	83·2	78.3	S.	78	·022	Dull and oppressive. Showery
14th	·692	87·3	78·5	78·5	76·4	S. W.	64	·210	Overcast. Showers between 9 A. M.
15th	·668	91·1	76·7	82·6	77·3	S. W.	108	.....	Dull and heavy. [and 3. P. M.
16th	·712	94·2	77·2	84·5	77·9	S. S. W.	154	.....	Chiefly overcast.
17th	·765	93·1	77·7	85·4	77·9	S.	156	.....	Cloudy.
18th	·785	94·8	78·8	85·1	77·5	S.	163	.....	Do. [and 8 P. M.
19th	·786	95·7	78·7	82·0	76·7	S. S. W.	174	·740	Overcast. Rain between 3 and 3¾
20th	·830	84·4	76·9	79·3	76·0	S.	58	·122	Overcast. Showery.
21st	·879	84·1	76·7	77·8	75·0	S. E.	53	·217	Overcast. Rain between 5½ & 10 A.M.
22nd	·899	83·4	74·9	77·3	75·1	S. S. E.	57	·840	Overcast. Heavy rain about mid-day.
23rd	·843	91·1	74·4	79·7	76·4	S. S. W.	103	·133	Cloudy. Rain at 4½ P. M.
24th	·769	91·1	75·9	82·7	76·5	W. S. W.	140	.....	Cloudy.
25th	·726	85·8	76·7	80·1	76·3	W.	94	.223	Overcast.
26th	·687	88·2	72·9	81·3	76·8	W.	136	.157	Do.
27th	·669	89·7	77·9	83·1	75·8	W. S. W.	147	.....	Overcast. Rain before 2 A. M.
28th	·671	90·0	76·9	83·3	76·6	S. W.	176	·005	Chiefly overcast. Fall about 8 P. M.
29th	·738	91·7	76·9	83·7	78·4	S.	188	.....	Day, Cloudy. Night, Fine.
30th	·783	90·9	75·3	82·6	77·9	S.	111	·323	Nearly fine. Shower directly after mid-night.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

PART IV.

MEDICAL INTELLIGENCE.

MEMORANDA ON HIMALAYAN RHUBARB, AND DAPHNE FIBRE.

By H. C. CLEGHORN, M.D., Conservator of Forests, Madras: now on special duty in the Punjaub.

(Reprinted from the Punjaub Government Gazette.)

I.—HIMALAYAN RHUBARB.

Extract from Diary.

10*th May.*—Encamped at the village of Kishang; crossed, 5 A.M., with Captain Houchen, by a short and steep ghat (summit about 13,000 feet), to the valley of Asrang, north latitude 31° 40'; east longitude, 78° 20'; well known to sportsmen as the Ibex ground and glacier recorded in Colonel Markham's book *("Himalayan Sports")*, being at the upper end of the valley, which does not appear to have been visited by scientific travellers, Thomson and Hoffmeister having ascended the Werang ghat, a little to the eastward.

Two feet of snow lay on the pass, which was not considered open, but a general thaw had commenced. After a laborious march of six hours we reached Asrang village, where the profusion of indigenous Rhubarb at once attracted my attention. On both banks of Teeti river, wherever the snow had disappeared, the old roots were throwing out fresh shoots of a delicate pink color. These protruded from crevices of rock, (gneiss and mica slate) and, indeed, from under every solid stone and hedgerow in such abundance, that this might be called "the Rhubarb valley." The common Dock *(Rumex obtusifolius)* is not so conspicuous in the waste places of a Highland glen as is the officinal Rhubarb on the bare rocks in the valley of Asrang. It extends five or six miles down the valley, and ascends the slope to 500 feet above the river's bed; and I was assured by Captain Houchen and the Lama of Asrang, that equally abundant in the adjoining valley of Dingering.

2. We enjoyed the leaf stalks served with sugar during our stay of two days, and a load was despatched to Chini, where the ladies pronounced the Rhubarb to be "crisp, juicy, and well-flavoured." Any quantity of the leaves being procurable, their use was only limited by the amount of sugar in store.

Article of Diet.

3. The Lama attached to the village temple stated that the leaf stalks are not eaten (to any extent), being acid, "kata," and the roots are neither used nor exported. The large cordate leaves are used to shade the eyes in crossing the pass, as a precaution against snow-blindness, and they are collected for littering yaks and goats.

Native uses.

4. The roots vary much in size and shape. Some carefully selected, and apparently of 6 or 8 years' growth, were compact and heavy, 4 to 6 ounces in weight; the largest procurable were picked out of the crevices of stone dykes, with a little soil and debris around them. When divided the section presents the *marbled* appearance characteristic of commercial Rhubarb. The bright yellow color, gritty taste, and peculiar aroma, are also satisfactory. Owing to the rapid development of leaves at the time of my visit, the roots were becoming spongy, and not in the best state for collection and preservation. This circumstance prevented me from collecting them in quantity, with a view to analysis and report. In the autumn (September), when the stems die down, or very early in spring before the shoots sprout, the roots will be more compact and fit for carriage. Twelve roots, however, were planted by Captain Houchen on our return to Chini, close to the bungalow, and the plant has been propagated by Mr. S. Berkley, in his garden at Kotghur.

Description of Root.

5. I had an opportunity of testing the therapeutic action of the fresh root, and found it to resemble that of Russian Rhubarb from Apothecary's Hall, "which grows wild in Chinese Tartary, and extends to the south near Thibet." *(Pallas. Voyage, t. IV, p.* 216*)*, consequently at no great distance from Upper Kunawar. I have consulted the works of Himalayan travellers, Hooker, Thomson, Griffiths, Jacquemont, Hoffmeister, and Jameson, and find

Medicinal action.

the occurrence of different species of the genus *Rheum*, in various portions of the snowy range recorded by these authors. The excellence of the hill Rhubarb as an article of diet is likewise corroborated by the MSS. reports of Colonel Longden and Major Thomas, who observed it in Koolloo and Pangi respectively. But in Royle's "Illustration of the Botany of the Himalayas," the source of commercial Rhubarb is fully discussed. When at Saharunpore he made many efforts to trace its route, and as the information he collected is curious and valuable, I quote the result of his enquiries.

Geographical Distribution. (Dr. Royle.)

6. "The Chinese obtain the Rhubarb produced in China Paper from that part of the province of Shensee—now called Kansu—situated between north latitude 35° and 40.° But the best, according to the Missionaries, who say it is called *Tai hoang*, is in the province of Setchnen, from the mountains called Sue-chan, or of snow, which extended from north latitude 26° to 33° and from about 100° to 105° of east longitude. That from the latter province, probably, forms much of what is called China Rhubarb. The Missionaries met large quantities of it brought down in the months of October and November. That from Kansu may afford some of what is called Russian Rhubarb: but both Pallas and Rehman have ascertained that the greater portion, if not the whole of this, is obtained in April and May, from the clefts of rocks in high and arid mountains surrounding lake Kokonor.

"This would bring the Rhubarb country within 95° of east longitude, in 35° of north lat., that is, into the heart of Thibet.* As no naturalist has visited this part, and neither plants nor seeds have been obtained thence, it is as yet unknown what species yields this Rhubarb. * * * *

"As it is improbable, from the nature of the country, that the best Rhubarb is confined within very narrow limits, it becomes interesting to ascertain how near it approaches the British territories in India, in order to share in the trade, or attempt the cultivation. * * *

"Mr. Moorcroft discovered Rhubarb at Niti' and between Niti and Gotung, that is, at elevations of 12,000 feet. * * * * If we turn our attention to the northern face of the Himalaya, which has so many features of a Tartarian climate, we find *R. spiciforme*,

* Since Dr. Royle's work appeared Dr. Thomson and Col. Cunningham have explored the Thibetan mountains, and the latter published (1852) an admirable narrative of his journey through the mountains of Northern India, but there is no special mention of Rhubarb.

discovered by Mr. Inglis on the Werang pass, and at several places beyond. Dr. Gerard describes the table-land of Tartary as covered with Rhubarb, at elevations of 16,000 feet. Mr. Moorcroft sent some Rhubarb from near Ladak, in north latitude 34° and east longitude 77½°, which, for compactness of texture, color, and properties, was as fine as any I have ever seen. But these are only the western boundaries of the elevated, cold, and bleak regions, known under the names of Tartary, Mongolia, and Thibet, of which Kunawur is essentially a part, participating in the same great physical features, climate, and vegetation ; already possessing one, if not two, species of Rhubarb, and having the best growing in its *immediate vicinity*. There can, therefore, be no rational doubt about the successful cultivation of true Rhubarb in territories within the British influence, as in Kunawar, or the Bhoteah pergunhas of Kumaon, and that with little more labor than placing the roots or seeds in favourable situations. The only difficulty will be to obtain specimens of the true Rhubarb."—(*"Royle's Illustrations of the Botany of the Himalayan Mountains." p.* 314.)

These were the well-considered opinions of Dr. Royle, (1839) whose eminent services to Indian Botany need not be noticed here, save to mention that he made the only attempt to elucidate the commercial history and geographical distribution of this Himalayan product. So far as I know, little information has been since added to our knowledge of the subject, except by the researches of the late Dr. Pereira *(Materia Medica).* If my surmise be correct that the indigenous *Rheum*, widely diffused in the rocky valleys of Asrang and Dingering, is one of the species furnishing the officinal Rhubarb, or, at least, possessing valuable properties, cultivation is not required, but only a knowledge of the mode of dressing and preparing the roots, so as to make it merchantable.

Species yielding Himalayan Rhubarb.

1. *Rheum Emodi* (Wall, Pindree Glacier, &c.
2. *R. Webbianum* (Royle), Choor Mountain.
3. *R. Spiciforme*, (Royle), Werang Pass.
4. *R. Moorcroftianum* (Royle), Niti Pass.

The above four species yield part of the Himalayan Rhubarb, according to Pereira, (*Mat. Med.* Vol. II. p. 485 ;) the two last have denser and more yellow roots than the two first mentioned, and I believe that the Asrang plant is one of them, but in the absence of stem, flower, and fruit, the essential characters for identification were wanting.

Preparation of the Root.

8. The method of preparation varies in different localities,—the following description is given by Pereira, (*Mat. Med.* II. p. 486.) "In China the roots are dug up, cleansed, cut in pieces, and dried on stone tables, heated beneath by a fire. During the process the roots are frequently turned. They are afterwards pierced, strung upon cords, and further dried in the sun. In Tartary the Moguls cut the roots in small pieces, in order that they may dry the more readily, and make a hole in the middle of every piece, through which a cord is drawn, in order to suspend them in any convenient place. They hang them, for the most part, about their tents, and sometimes on the horns of their sheep." Sievers, however, states that the roots are cut in pieces, strung upon threads, and dried under sheds, so as to exclude the solar rays; and the same author tells us that sometimes a year elapses from the time of their collection until they are ready for exportation.

Exportation of Himalayan Rhubarb.

9. At present, Himlayan Rhubarb makes its way sparingly to the plains of India through Almora and Butan (*Madden. As. Soc. Jour.* 1841). Dr. Wallich obtained specimens from the inhabitants of the Himalayas, who had strung them round the necks of their mules. In 1840 when China Rhubarb was scarce and dear, 19 chests of Himalayan Rhubarb were imported from Calcutta into England, but the samples do not appear to have been "ordinary;" "the color was dark brown," the taste bitter, the ordour feeble. "It was exceedingly light and worm-eaten. This was the first shipment ever made of Himalayan Rhubarb to England. Two chests sold at four-pence per lb., the remainder at one penny per lb."—(*Pereira. Mat. Med.* vol. II. p. 492.)

Dr. Royle says that Himalayan Rhubarb sells for only one-tenth of the price of the best Rhubarb, resembling in quality the Russian, which is found in India, (*Bot. Him. Mountains*, p. 316.)

British Import.

10. The quantity of Rhubarb imported into Britain during six years, was as follows:—

1843	268,766	lbs.
1844	206,015	„
1845	323,416	„
1846	427,694	„
1847	305,736	„
1848	116,005	„

No later returns are available, but the above sufficiently indicates the importance of the trade, part of which may be expected to find an outlet through India, instead of passing north-west to Russia, or east-ward to China, before exportation to England.

Conclusions.

I.—From the researches of Royle and Pereira, it would appear that the varieties known as Russian and China Rhubarb are produced across the chain of Himalayan Mountains beginning at no great distance (3 or 4 degrees of latitude) from the British territory. It is probable that the species affording them inhabit a widely extended area.

II.—Although so important and familiar a drug, the source of the best varieties is not certainly ascertained. Specimens of flower, leaf and root, with exact information as to the locality, &c., are desiderata.

III.—An inferior variety only of Hymalayan Rhubarb reaches the plains of Hindostan.

IV.—The extension of Hill roads now in progress must have an important effect in promoting traffic in Rhubarb, and other little-known products along the frontier. If an annual fair were established at Chini, many northern traders would resort to it, and with the sanction of Government the quantity of Rhubarb required for the medical stores might be purchased there, instead of as now in a London Warehouse and brought thence round the Cape to Calcutta.

V.—I would suggest that carefully selected roots be gathered in Kunawar, Kullu, and Pangi, (where Rhubarb is known to grow) in autumn, for transmission to London and subsequent valuation. Botanical specimens with accurate date and locality should accompany the roots that the species may be identified.

II.—DAPHNE FIBRE.

Extracts from Diary.

"8th May, Chini to Kishang. The road lay through a forest of *Cedrus Deodara* and *Pinus Gerardiana*, with numerous bushes of *Daphne mucronata?* of Royle, known as "Jeku" in the valley of the Sutlej, a pretty shrub with white flowers, 3 to 5 feet high, with smooth, upright, plaint, branches. The fibrous bark is

used in the same way as that of *D. papyracea* in Nepaul, and is regularly exported to Sungnum, Shipki, and Ladak, for the purpose of paper manufacture. In the course of three days I met nine men laden with the bleached bark, neatly tied in small bundles; the fibre being light, 24* bundles, 2 feet long and 3 inches thick, form a man's load. They were all hill men, returning from Rampore to their homes on the frontier, where the Daphne is not found.

Process of making paper at Sungnum.

2. With much difficulty I ascertained some particulars of the process of paper manufacture at Sungnum, which we did not visit. It is somewhat as follows, and resembles the obsolete fashion of paper making by hand in England. Having brought the bark of "Jeku" from the jungle, it is left in water for one day. The inner layer is then easily separated by hand, and after being dried, the raw material is carried up the valley on men's backs as above noticed. It is again steeped in water, through which wood-ashes† (Walnut) are diffused, and heat is applied till the bark becomes soft and white. It is then removed and beaten with a mallet till it assumes the form of pulp, which is stirred round in a tub, and afterwards allowed to deposit on a cloth sieve or frame, 1 yard wide, which is finally put out to dry in the sun.

This Daphne abundant.

3. The "Jeku" shrub is common in the basin of the Sutlej, (upper and lower Kunawar) and also in the valleys of the Pabur and Tonse, at an elevation of 4,000 to 7,000 feet. It is particularly abundant near Pangi, one stage beyond Chini, and from Mirn to Wangtu, preferring exposed cliffs where little else will grow.

Property of its fibre.

4. The fibre of the bark like that of its congeners possesses great tenacity, and makes strong ropes, which are used in Gurhwal, &c. A soft, smooth and toughish paper is manufactured by the process detailed above, and is the only kind procurable in Ladakh and on the frontier.

Other species of Daphne.

5. Several Himalayan plants of the family afford paper fibre, and the material made from them of various qualities is in

* 3 bundles have been sent to Lahore.

† In Nepaul the wood ash or Oak is used.

common use in the North Western Provinces and Punjab. The better kinds are extremely strong, and are used for important documents, being durable and resisting the attacks of the fish insect (so called), hence this paper is well suited for public records and Herbaria. The process of making paper in Nepaul from *Daphne papyracea* is described in the Asiatic Researches (vol. XV ?) by Dr. Wallich, who figured the plant. Dr. Hooker states that the paper in Thibet is made chiefly from the bark of *Edgeworthia Gardneri*, and is imported from Nepaul and Butan. In the same manner Ladakh is supplied from Kunawar.

Jail Manufacture.

6. At Dhurmsalla Jail, an allied species, "Kanera" (*Daphne Oleoides ?*) is used, and the paper prepared is of fair quality. The shrub grows about 3 kos from the station, but the supply has fallen short, and consequently the District Court and Kutcherry are only partially supplied at present with the Daphne paper, the fibre of which is supplemented by the use of Tât. The paper made in the jail is sold at forty large sheets per rupee.

7. It is doubtful whether any material for paper making could be exported profitably from the Punjaub to England, the distance from the sea-board being so great, but the inner layer of the bark separates easily, and the paper made from it so nearly resembles cartridge paper being strong and tough and not cracking or giving way when folded or rubbed, that it might be advisable to send a shipment to England of the fibre of each species (say 1 ton of each) for trial and report. It will be remembered that the specimens shewing the various stages of manufacture of the Nepaul paper shrub *D. papyracea*) attract particular attention at Kew Museum and at the present International Exhibition in London.

ORDERS REGARDING THE ALLOWANCES OF MEDICAL OFFICERS IN CIVIL EMPLOY.

(Reprinted from Fort St. George Gazette, dated 6th October, 1862.)

Resolution.—It appears that some diversity of practice has prevailed in the manner of auditing the Military pay of Medical Officers attached to Public Institutions or employed in the Civil Department. Civil Paymasters in the Bengal Presidency audit and charge to the Civil Department the salary of Medical Officers in Civil employ. The Civil Paymaster, Bombay, leaves the net Military pay of a

Medical Officer to be audited and charged in the Military Department. It is expedient that the practice should be uniform.

His Excellency the Governor General in Council observes that Medical Officers in Civil employ are divided into two distinct classes, viz. :—

1st. Medical Officers attached to Civil Stations or Political Agencies, and

2nd. Medical Officers attached to Public Institutions, such as the Medical College, and to other Civil Staff appointments.

In the case of the former class, the entire allowances must, His Excellency in Council observes, be audited in the Civil Department and adjusted as a Civil charge, and such Officers cannot, during absence on leave, claim any portion of their salary in the Civil Department, under the Military Furlough Regulations of 1854. But, in the case of the 2nd class, the net Military pay must be audited and adjusted as a Military charge, and the Officers may, during absence on leave, draw absentee allowances from the Civil Department, under the Military Furlough Rules of 1854, and the general rules regarding the allowances of Military Officers in Civil employ.

Medical Officers in the Educational Department appear to His Excellency in Council to belong to the 2nd class.

In regard to the case of a Presidency Surgeon acting as Oculist, in addition to his own duties, supposed by the Bombay Civil Paymaster, no general rule can be laid down. Such a case being special, ought, in the opinion of His Excellency in Council, to be reported for orders when it actually occurs.

MEDICAL CHARGE OF MOFUSSIL POLICE.

The following proceedings of Government are of interest to Officers in Medical charge of Mofussil Police in this Presidency :—

JUDICIAL DEPARTMENT.

Proceedings of the Madras Government.

Read the following papers :—

From the Principal Inspector General Medical Department.
(Here enter 12th May 1862, No. 91.)

From the Collector of South Arcot.
(Here enter 21st May 1862, No. 25.)

From the Inspector General Madras Police.
(Here enter 11th June 1862, No. 1216.)

ORDER THEREON, 27*th June* 1862, No. 1012.

The foregoing letters have reference to the inconvenience caused by the men of the Police Force resorting in large numbers to the Civil Dispensaries and thereby preventing these institutions from being taken advantage of by the native population generally as was intended when they were founded.

2. The Inspector General of Police admits the objections which have been urged by the Principal Inspector General, Medical Department, and suggests in concurrence with that officer that separate provision should be made in each District for the Medical requirements of the constabulary.

3. His Excellency the Governor in Council requests that the Inspector General will give his immediate attention to the subject, and prepare, in communication with the Medical Department, a detailed scheme for providing separate Dispensaries, and if necessary separate Medical attendance for the men of his force in each District in which such arrangements may be requisite, together with an estimate of its cost. Wherever, as at Military stations, provision can be made for the Medical treatment of the Police Force at the Military Hospital, this should be done in preference to entailing on the State the cost of two separate establishments.

4. The Governor in Council is disposed to think, on further consideration, that Civil Surgeons are entitled to some remuneration for the heavy additional duty imposed upon them by the organization of the present Police Force. The Inspector General will make provision accordingly in the scheme now called for.

5. The Governor in Council regrets to observe that, in the letter addressed by the Collector of South Arcot to the Zillah Surgeon at Cuddalore, on the subject referred to in the correspondence above recorded, the former officer has permitted himself to make use of remarks, regarding the present Police Force, which are altogether unbecoming his position as the Magistrate of the District, and which, if known, are calculated to enhance the difficulty of placing the force upon an efficient footing. Such remarks are the more inexcusable, as under the orders of the Inspector General, a Roll of persons recruited for the Police is forwarded to the Collector in his capacity of Magistrate every month, in order "that he may notify to the Superintendent any objection that he or any of his subordinates may have to bring against such recruits."

6. The Governor in Council learns from the Inspector General's Administration Report, which has been just received, that South Arcot is one of the few Districts in which the Police Authorities have been unable to enlist the cordial co-operation of the Magistracy

and that as a natural consequence, there is the greatest possible difficulty in maintaining the force upon anything like an efficient footing.

7. The Governor in Council cannot permit this state of things to continue. The present Police arrangements have been adopted, after the fullest and most careful consideration. Their success depends in a great measure on the active co-operation of the Magistracy, and His Excellency in Council desires it to be distinctly understood that any Magistrate who, instead of supporting, places himself in a position of antagonism to the policy of the Government in reference to this important branch of the administration, will be removed from his office.

(True Extract,)

(Signed) A. J. Arbuthnot,

Acting Chief Secretary.

General Department, No. 1403.

Chief Office of the Inspector General of Mofussil Police.

Madras, 1*st July*, 1862.

From W. Robinson, Esq., *Inspector General of Mofussil Police;* to R. Cole, Esq., *Principal Inspector General Medical Department, Fort St. George.*

Sir,

With reference to the Order of Government dated 27th June 1862, No. 1012, I have the honor to request that you will have the goodness to inform the Inspector General of Division and Zillah Surgeons that the Officers of Police, Deputy Inspector General of Ranges, and District Superintendents, have been instructed to place themselves in communication with the Medical Officers of their Divisions and Districts with a view to carrying out the orders of Government.

I have, &c., &c.,

(Signed) W. Robinson,

Insp. Genl. of Mofussil Police.

(True Copies.)

(Signed) W. R. Cornish,

Secy. to Prin. Insp. Genl. Med. Dept.

CIVIL HOSPITAL AT MANARGODE.

We have been favoured with a detailed account of the opening of the Charity Female Ward of the above Hospital. We regret that the length of these proceedings prevents our insertion of them. But we desire to record the gratification we have derived from perusing the Report of the Committee of Management.

Under the skilful care of Native Surgeon Mootoosawmy this Dispensary has become one of great public usefulness, and this is so far recognized by the natives that gentlemen of the higher castes, and occupying responsible Government position, and possessed of independent means, have come forward to aid the completion of an institution where the European system of medicine is carried out.

END OF VOLUME FIFTH.

APPENDIX.

MEDICAL DIRECTORY FOR SOUTHERN INDIA.

For the Half Year commencing 1st October, 1862.

CIVIL DEPARTMENT.

I.

MADRAS MEDICAL COLLEGE.

PRINCIPAL.

JAMES SHAW, Esq., F.R.C.S.—*S. C. to sea.*

J. E. MAYER, Esq., *Acting.*

PROFESSORS.

Arranged in order of their permanent appointment.

J. SHAW, Esq., F.R.C.S.....*Professor of Midwifery and Diseases of the Eye.*
J. E. MAYER, Esq.....*Professor of Chemistry.*
A. BLACKLOCK, Esq.....*Professor of Medicine and Clinical Medicine.*
H. B. MONTGOMERY, Esq., A.B., M.D., F.R.C.S.I., &c.....*Professor of Botany, Materia Medica, and Therapeutics.*
J. L. PAUL, Esq., A.M, M.D.....*Professor of Surgery and Clinical Surgery.*
W. N. CHIPPERFIELD, Esq.....*Professor of Anatomy and Physiology.*

ASSISTANTS.

Mr. R. HARVEY.....*In Chemical Department.*
Mr. R. WILKINS.....*Demonstrator of Anatomy and Curator of the Museum.*
Mr. J. J. WOOD.....*In Botany and Materia Medica.*

MR. J. JOBARD, *Librarian.*

M. JUGGERNAD, *Native Assistant.*

MR. WATKINS, *English Teacher.*

II.

THE UNIVERSITY OF MADRAS.

THE FACULTY OF MEDICINE.

President.

J. SHAW, Esq., F.R.C.S.—*S. C. to sea.*

Members.

A. J. ARBUTHNOT, Esq.
T. PYCROFT, Esq.
Col. C. A. BROWNE.
J. E. MAYER, Esq.
J. SANDERSON, Esq.
W. J. VAN-SOMEREN, Esq., M.D.
SAMUEL JESUDASEN PILLAY.
W. MACLEAN, Esq., M.D. *Eur. Furlough.*
G. W. FLYNN, Esq., M.D.

III.

CORONER OF MADRAS.

J. URQUHART, Esq., M.D.

DEPUTY CORONER OF MADRAS.

R. S. MAIR, Esq., M.D.

IV.

PORT AND MARINE SURGEON.

H. B. MONTGOMERY, Esq., A.B., M.D., F.R.C.S.I., &c.

V.

CHEMICAL EXAMINER TO GOVERNMENT.

A. J. SCOTT, Esq., M.D., *Eur. S. C.*
J. E. MAYER, Esq., *Acting.*

VI.

EMIGRATION SURGEON.

W. J. VAN-SOMEREN, Esq., M.D.

VII.

MADRAS MINT, ASSAY DEPARTMENT.

G. J. SHAW, Esq., M.D., *Assay Master.*
A. J. SCOTT, Esq., M.D., *Asst. Assay Master, Eur. S. C.*
W. AITKEN, Esq., M.D., *Acting do.*

VIII.

CONSULTING PHYSICIAN MADRAS RAILWAY COMPANY.

J. SANDERSON, Esq.

IX.

SUPERINTENDENT OF VACCINATION DEPÔT.

J. SANDERSON, Esq.

X.

THE MEDICAL REFEREES OF LIFE ASSURANCE SOCIETIES.

JAMES SHAW, Esq.....*The Madras Equitable.*
JAMES SHAW, Esq.....*Church of England.*
W. J. VAN-SOMEREN, Esq., M.D.....*The Albert, Medical, and General.*
J. SANDERSON, Esq.....*Universal.*
JAMES SHAW, Esq.....*Colonial.*

XI.

MEDICAL HOSPITALS AND DISPENSARIES, MADRAS.

General Hospital, Black Town Esplanade.	A. BLACKLOCK, Esq., *Physician.* J. L. PAUL, Esq., M.D., *Surgeon.* Mr. A. DOUTRE, *Apothecary.*
Eye Infirmary, Poonamallee Road.	JAMES SHAW, Esq., *Superintendent.* W. N. CHIPPERFIELD, Esq., *Acting.* Mr. T. B. TURNBULL, *Apothecary.*
Civil Dispensary, General Hospital Street.	J. L. PAUL, Esq., A. M., D. M., *Surgn.* Mr. H. H. LYNSDALE, *Apothecary.*
Native Infirmary and Idiot Asylum, Attapalium Road.	W. J. VAN-SOMEREN, Esq., M.D., *Surg.* Mr. ABEL GROVE, *Apothecary.*
Leper Hospital, Attapalium Road.	W. J. VAN-SOMEREN, Esq., M.D., *Surg.* ————————, *Apothecary.*
Triplicane Dispensary, Royapettah.	H. W. PORTEOUS, Esq., *Surgeon.* Mr. G. A. TRUTWEIN, *Apothecary.*
Fort Saint George Dispensary, St. Thomé Street, Fort.	H. B. MONTGOMERY, Esq., M.D., *Surg.* Mr. DEWSNAP, *Senior Apothecary.*
Chintadrepettah Dispensary, Chintadrepettah.	J. SANDERSON, Esq., *Surg.* Mr. J. THOMAS, *Apothecary.*
Port and Marine Dispensary, Custom House.	H. B. MONTGOMERY, Esq., M.D., *Surg.* Mr. STIRLING, *Apothecary.*
Lunatic Asylum, Kilpauk.	S. MASON, Esq., *Resident Medl. Offir.* Mr. T. R. PECK, *Apothecary.*
Lying-in-Hospital and Dispensary, Egmore.	W. AITKIN, Esq., M.D., *Supt.* Mr. J. GORMAN, *Apothecary.*
Vepery Dispensary, Shoolay.	J. W. MUDGE, Esq., M.D., *Surgeon.* Mr. G. BAMFORD, *Apothecary.*
Free Church of Scotland Charitable Institution.	————————, *Surgeon.* ————————, *Apothecary.*
Black Town Dispensary, Saulay Street.	SAMUEL JESUDASEN Pillay, *Surgeon.* ————————, *Apothecary.*

XII.

MEDICAL OFFICERS OF PUBLIC INSTITUTIONS.

Military Male Orphan Asylum	C. M. DUFF, Esq., M. D.
Do. Female do. do. *Powder Mills.* *Gun Carriage Manufactory.*	J. W. MUDGE, Esq., M.D.

Civil Male and Female Orphan Asylums, H. M. Jail.	J. W. VAN-SOMEREN, Esq., M.D.
Penitentiary	WM. AITKEN, Esq., M.D. Mr. JONES, *Apothecary.*

XIII.

PHYSICIANS AND SURGEONS IN MADRAS.

AITKIN, WM., Esq., M.D. ..... *Poonamallee Road.*
BALFOUR, E. G., Esq. ..... *Royal Hotel.*
BLACKLOCK, A., Esq. ..... *General Hospital.*
CHIPPERFIELD, W. N., Esq. ..... *Eye Infirmary.*
COLE, R., Esq. ..... *Mount Road.*
CONRAN, GEORGE, Esq., M.D. ..... *Pursewalkum.*
CORNISH, W. R., Esq. ..... *Mount Road.*
DUFF, C. M., Esq., M.D. ..... *Nungumbaukum.*
FLYNN, G. W., Esq., M.D. ..... *Mount Road.*
FORBES, J., Esq. ..... ———
MAIR, R. S., Esq., M.D. ..... *Poonamallee Road.*
MAYER, J. E., Esq. ..... *The Luz.*
MCKENNA, J. E., Esq., M.D. ..... *Commander-in-Chief's Road.*
MONTGOMERY, H. B., Esq., M.D. ..... *Fort Saint George.*
MUDGE, J. W., Esq., M.D. ..... *Pursewalkum.*
PAUL, J. L., Esq., M.D. ..... *General Hospital.*
PORTEOUS, H. W., Esq. ..... *Mowbray Road.*
SANDERSON, J., Esq. ..... *Elphinstone Hotel.*
SCOTT, A. J., Esq., M.D. ..... Europe s. c.
SHAW, G. J., Esq., M.D. ..... *Shawfield, Egmore.*
SHAW, J., Esq. ..... *Eye Infirmary, Poonamallee Road. S. C.*
THOMPSON, D. R., Esq., M.D. ..... *Pursewalkum.*
URQUHART, J., Esq., M.D. ..... *Poonamallee Road.*
VAN-SOMEREN, W. J., Esq., M.D. ..... *Royapooram.*

XIV.

DENTIST.

CLARKE, S. G., Esq., ... ———

XV.

CHEMISTS AND DRUGGISTS.

BARRIE AND CO., ... *Vepery Dispensary, Poonamallee Road.*
Do. (Branch) ..... 16, *Mount Road.*
DEBEAUX AND CO. ..... *Esplanade.*
FLYNN, G. W. AND CO. ..... 135, *Mount Road, Presidency Dispensary (late Government Dispensary.)*
LEE AND CO. ..... 10, *Popham's Broadway.*
LEFEBOUR ..... *Do. do.*
NORTON, G. ..... *John Pereira's.*
SCOTT AND CO. ..... *Popham's Broadway.*
SECLUNA AND CO. ..... *Vepery.*
YAULL AND SON ..... *Popham's Broadway.*

MILITARY DEPARTMENT.

In the following pages the Titles of the Medical Officers of the Madras Army are thus indicated.

1 F.R.C.S., England. ... | 5 L.R.C.S., Edinburgh. | 9 F.R.C.P. | 13 Fac. Phy. Sur. Glas.
2 F.R.C.S., Edinburgh. ... | 6 L.R.C.S., Ireland. | 10 M.R.C.P. | 14 F.G.S.
3 F.R.C.S., Ireland. ... | 7 M.D. | 11 L.A.C. | 15 Grad. Med. and Surg. Madras Medical College.
4 M.R.C.S., London. ... | 8 M.B. | 12 L.M.

† A.B. †† A.M. ††† F.L.S.

* prefixed to an Officer's name indicates the possession of a Medal for War Service.

Nominal List of Medical Officers of Her Majesty's Indian Forces on the Establishment under the Presidency of Fort St. George, showing their Professional Titles, dates of Rank, and how employed.

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Date of Rank as Inspector General.	Nominal Service to 30th Sept. 1862. Y.	M.	D.	Corps or Department.	Station.
Inspectors of General Hospitals.										
1	Robert Cole ...	4	8th May 1827	24th Sept. 1840	28th April 1861	35	4	23	Prin. Insp. Genl. Med. Dept. Hony. Surgeon to Her Majesty.....	Madras.
	*Duncan Macpherson ...	7	18th do 1836	11th Dec. 1852	8th Jan. 1858	26	4	13	Hony. Physician to Her Majesty.	Europe s. c.
Deputy Inspectors General of Hospitals.										
	*John Templeman Maule..	5	14th May 1825	25th May 1838	8th Feb. 1851	37	4	17	Hyd. Sub. Force.	
	Henry Gibbon Graham ...	.....	3rd June	2nd Feb. 1841	18th June 1855	35	3	27	Mysore Division.	Bangalore.
5	Frederick Cooper ...	4-11	4th Aug.	17th Dec.	12th Feb. 1856	34	7	27	Northern Div...	Europe s. c.
	John McKenna ...	7	20th May	31st do	20th Oct. 1857	34	4	11	Presy. and Centre Divn. ...	Madras.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Date of Rank as Depy. Inspector General.	Nominal Service to 30th Sept. 1862. Y.	M.	D.	Corps or Department.	Station.
	Cornelius Clarke Linton...	4-12	9th Mar. 1829	29th Feb. 1844	15th April 1858	33	6	22	Southern Divn..	Trichinopoly.
	John Lovell ...	4	30th Aug.	3rd June 1845	11th July 1859	33	1	1	.....	Europe s. c.
	John Forbes ...	10-4-12	24th do.	28th Feb. 1847	.....	32	1	17	Actg. Insp. Genl. of Hospitals..	Presidency.
10	Charles Irving Smith ...	10-4-11	15th May 1830	29th do 1848	3rd Oct. 1862.	31	4	16	Depy. Ins. Genl. of Hospls. N. Division.....	Vizagapatam.

Surgeons Major, Regimental and Staff Surgeons.

					Surgeon Major.					
	*Henry Goodall ...	4	24th Aug. 1830	28th Feb. 1847	13th Jany. 1860	32	1	17	21st Regt. N. I.	Vellore.
	Colin Paterson ...	7	22nd Oct.	2nd June 1849	do	30	11	9	Actg. Dy. Ins. Gl. of Hospls.	Nagpore Force.
	John Colin Campbell ...	5-4	15th Nov.	9th Aug.	do	31	10	15	Durbar Surgeon.	Mysore.
	*James Dorward ...	.....	12th Feb. 1832	31st do	do	30	7	16	Actg. Dy. Insp. Gl. of Hospls. Ceded Dists...	Bellary.
15	John Emelius Mayer ...	4	26th Mar. 1833	28th Feb. 1850	do	29	6	5	Med. Storekeeper & Prof. of Chemistry & Actg Chemical Exmr.	Presidency.
	James Shaw ...	1	19th May 1834	31st Jany. 1851	do	28	4	12	Supt. Eye Infiry.	Madras-Sea s. c.
	Robert Henry Rennick ...	4	21st Decr.	13th Feb.	do	27	9	10	31st Regt. N. I.	Waltair.
	*William Mackenzie, C.B...	††-7	14th Jany. 1835	5th do	do	27	8	17	Hyd. Contingent	Mominabad.
	*Thomas Caverhill Jerdon..	4	11th Sept.	29th do	do	27	0	19	Services placed temply. at the disposal of the Govt. of India.	
20	Edward Green Balfour ...	5-4	2nd June	31st Dec.	do	26	3	28	Medl. Exmr. of Accounts. ...	Madras.

	James Sanderson ...	5	27th Oct.	15th Mar. 1853	do	25	11	5	Garrison Surgn.	Madras.
	*John Henry Orr, C.B. ...	.....	22nd Feb. 1837	17th July	do	25	6	7	Hyd. Contingent	Hingolie.
	*John Andrew Reynolds...	4	28th do	24th Nov.	do	25	6	0	Garrison Surgn.	Cannanore.
	William George Prichard..	7-12-5	4th April	15th Decr.	do	25	5	26	.....	Europe s. c.
25	*Joseph Myres Jackson ...	4	2nd June	1st Jany. 1854	do	25	3	28	Garrison Surgn.	Bellary.
	*Char. Geo. Edwin Ford...	1-12	29th Aug.	8th do	do	25	1	3	17th Brig. Royal Artillery.....	Mount.
	*Donald MacFarlane ...	7-9	11th Jany. 1838	14th Feb.	do	24	8	20	23rd do.	Secunderabad.
	Henry William Porteous ..	5	10th Feb.	24th do	do	24	7	18	Surg. 4th Dist...	Madras.
	John Kennedy ..	7-5	27th Mar.	29th Oct.	do	24	6	4	20th Brig. Royal Artillery ..	Kamptee.
30	David Thomas Morton ...	4	7th do	29th do	do	24	6	4	.....	Europe s. c.
	*Wil. Campbell Maclean...	7	29th April	9th Dec.	do	24	5	2	Surgn. 3rd Dist.	Eur. special Fur.
	John Borlase Stevens ...	4-11	29th do	1st Jany. 1855	do	24	5	2	18th Regt. N. I.	Cannanore.
	*Char. William Pickering...	4-11	21st Aug.	21st do	do	24	1	10	3rd M. E. Regt..	Jaulnah.
	*Henry Edward Hadwen...	4	26th Jany. 1839	16th Mar.	do	23	8	6	35th Regt. N. I.	Bellary.
35	James Cecil Burton ..	7-5	14th May	26th July	do	23	4	17	41st Regt. N. I.	Arcot.
	*Charles Timmins ...	1-4-11	1st Sept.	10th Feb. 1856	do	23	0	29	No. 3 (Lt. Field) Bat. 23rd Brig. Royal Arty...	Thayetmyoo.
	Henry Smith ...	4-12	22nd do	12th do	do	23	0	18	8th Regt. N. I,.	Mangalore.
	Edward Samuel Tribe ...	4	16th Oct.	30th Mar.	do	22	11	6	.....	Europe s. c.
	Charles Barclay ...	.....	3rd Decr.	27th April	do	22	9	28	25th Regt. N. I.	Mercara.
40	Moses Rogers ...	4-11	3rd do	16th May	do	22	9	28	3d Royal H.Bgde	Bangalore.
	James Lancaster Ranking...	4	6th do	18th Sept.	do	22	8	25	2nd Regt. E.L.I.	Trichinopoly.
	James Peterkin ...	7-4-11	6th do	28th Feb. 1857	do	22	8	25	.....	Europe s. c.
	John Pringle ...	7-5-12	6th do	18th do	do	22	8	25	1st Madras Fus.	Bangalore.
	*William Johnston ...	7-5-4	6th do	28th Aug.	do	22	8	25	d. d. 17th Bgde. Royal Arty....	St. Thomas' Mt.
45	Ambrose Blacklock ...	5	8th Feb. 1840	1st Dec.	8th Feb.	22	7	20	Phy. Gl. Hospl.	Madras.
	*John William Mudge ...	7-5	8th Mar.	25th Feb. 1858	8th Mar.	22	6	23	Surgn. 2d Dist...	Madras.
	*William Wilson Rawes ...	.....	14th April	29th June	14th April	22	5	26	4th Regt. L. C...	Kamptee.
	James Mackintosh ...	.....	22nd Dec.	5th Aug.	22nd Dec.	21	9	10	32nd Regt. N.I.	Secunderabad.
	John Fitz Patrick ...	7-1-10-12	29th do	2nd Jany. 1859	.....	21	9	3	.....	Europe Fur.
50	William Scott ...	7-5	30th Jany. 1841	9th April	.....	21	8	2	d. d. 24th Regiment T. L. I....	Vizianagram.
	*Wil. Hewitt Seton Burn...	4-12	17th Feb.	5th May	15th Nov. 1861	21	7	11	34th Regt. L.I...	Madras.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Date of Rank as Surgeon Major.	Nominal Service to 30th Sept. 1862. Y.	M.	D.	Corps or Department.	Station.
	John Kinloch Ogilvie ...	7	17th Feb. 1841	10th Aug. 1859	17th Feb. 1861	21	7	11	30th Regt. N. I.	Bellary.
	*Alex. Charles MacLeod ...	4	8th Mar.	26th Oct.	.....	21	6	28	.....	Europe s. c.
	Robert Rushbrook Sutleffe.	4	8th do	19th Nov.	.....	21	6	28	5th Regt. N. I.	Berhampore.
55	James Ratton ...	4-11	2nd April	30th do	.....	21	5	28	3rd do L. C.	Cannanore.
	*William Forrester ...	.....	1st May	30th do	.....	21	5	0	16th do N. I.	Hurryhur.
	Henry James Penny ...	1	3rd Oct.	30th do	8th Feb. 1862	20	11	28	2nd do L. C.	Secunderabad.
	Charles Murray Duff ...	7-5-12	4th Jany. 1842	2nd Jany. 1860	.....	20	8	27	Ag. Sug. 3d Dist.	Madras.
	Henry Young ...	4	8th do	19th Feb.	.....	20	8	23	6th Regt. N. I.	French Rocks.
60	Henry T. Webster Harper.	4	30th do	1st Mar.	.....	20	8	2	22nd do ...	Bangalore.
	Chris. Beadnell Craske. ...	4-11	15th Feb.	2nd Sept.	.....	20	7	0	10th do ...	Jubbulpore.
	James Kirkpatrick ...	7-5	30th April	28th Dec.	30th April 1862	20	3	1	Surg. to Commn.	Mysore.
	*Henry Carnegie ...	4	19th June	1st Jany. 1861	.....	20	3	11	26th Regt. N. I.	Kamptee.
	Robert Pilkington Linton.	4-12-11	2nd Aug.	8th Feb.	.....	20	1	29	1st do L. C.	Bangalore.
56	Hugh Francis Clarke Cleghorn.	7	10th do	21st do	.....	20	1	20	Service placed temply at the disposal of Govt of India.	Punjaub.
	Matthew Kane ...	††-7-12	20th do	1st Mar.	.....	20	1	11	Dy. Assay Mr...	Bombay.
	*George Mackay ...	7-10-5-12	28th Dec.	1st do	.....	19	9	4	44th Regt. N. I.	Madras.
	Alexander Hunter ...	7-2-12	2nd Feb. 1843	14th April	.....	19	7	26	Supt. of the School of Arts.	Madras.
	Hamlin Nott ...	4-10	12th do	28th May	.....	19	7	16	16th Regt. N. I.	Hurryhur.
70	Frederick Fletcher ...	5-12	4th April	15th June	.....	19	5	26	27th do ...	Cuddapah.
	James Hay Blackwell ...	5-12	27th Jany. 1844	13th Aug.	.....	18	8	5	12th do ...	Secunderabad.
	Andrew James Scott ...	7-5-12	1st March	18th Nov.	.....	18	7	0	Asst. Assay Mr.	Europe s. c.
	Wil. Wentworth Heude ...	7-5-12	25th do	22nd Feb. 1862	.....	18	6	7	Civil Surgeon...	Nagpore.
	John Colebrook ...	4-11	1st April	26th do	.....	18	6	0	.....	Europe s. c.
75	William Williamson ...	5	16th do	26th do	.....	18	5	14	.....	Europe s. c.

Staff and Regimental Assistant Surgeons.

				No. and Rank in this grade.						
	George Smith ...	7-5	3rd Aug. 1844	1st Class	1 ...	18	1	28	.....	Europe s. c.
	Walter Alexander Leslie ...	4-11	11th Feb.	do	...	17	7	17	Medical Officer ...	Coonoor.
	Frederick Lewis Clementson ...	4	20th Aug.	do	...	17	1	11	....	Europe s. c.
	John Brett ...	7-††-11-12 ...	12th Sept.	do	...	17	0	18	14th Regt. N. I. ...	Bangalore.
80	William Aitken. ...	7-5-12	26th Jany. 1846	do	...	16	8	5	Supt. Lyg.-in-Hosl., Ag. Asst. Assay Master..	Madras.
	*Patrick Gerald FitzGerald. ...	7-12-3	20th March	do	...	16	6	11	Sr. Staff Asst. Surg....	Palaveram.
	William Judson vanSomeren..	7-5-12	7th April	do	...	16	5	23	Surgeon 1st District..	Madras.
	James Boyd Fleming ...	7-5	17th do	do	...	16	5	13	Resy. Surgeon ...	Hyderabad.
	*Duncan Mackenzie ...	5	5th May	do	...	16	4	26	....	Europe s.c.
85	*George Bailie ...	7	19th do	do	10 ...	16	4	22	19th Regt. N. I. ...	Secunderabad.
	Edward Dixon ...	5	3rd June	do	...	16	3	27	29th do ...	Kamptee.
	James Cowpar ...	4-12	20th Jany. 1848	do	...	14	8	11	Civil Asst. Surgeon ...	Singapore.
	Arthur Langford Trewman Cooke ...	4	9th March	do	...	14	6	22	....	Australia *Fur.*
	*Lestock Wilson Stewart ...	4	28th May	do	...	14	4	4	Medical Officer ...	Ootacamund.
90	John Robert Theobalds ...	4	20th Dec.	do	...	13	9	12	9th Regt. N. I. ...	Jaulnah.
	George Flower Trimnell ...	4-4	27th do	do	...	13	9	5	1st do ...	Hoosingabad.
	James Donaldson ...	7-5	20th Feb. 1849	do	...	13	7	18	.....	Europe s. c.
	Charles James Rogers ...	4	29th April	do	...	13	5	10	Medical Officer ...	Ootacamund.
	*Edward John Waring ...	4-12	22nd June	do	...	13	3	8	Phy. to H. H. the Rajah of Travancore.	Trevandrum.
95	*George Whittaker Walter ..	4-12	12th Oct.	do	20 ...	12	11	19	d. d. 4th Regt. N. I .	Madras.
	John Liston Paul ..	7-5-††	20th Jany. 1850	do	...	12	8	11	Surgn. General Hospl.	Madras.
	John George Gibbs ...	4-12	do	do	...	12	8	11	....	Europe *Fur.*
	Henry Rowley Donaldson Marrett ...	4	16th Feb.	do	...	12	7	12	Zillah Surgeon ...	Salem.
	John Wilson ...	4-11	9th March	do	...	12	6	12	Civil Assistant Surg.	Jubbulpore.
100	William Augustus Jacob ...	7-12-4	20th do	do	...	12	6	11	.....	Europe s. c.
	John Miller ...	7-5-12	8th July	do	...	12	2	23	.....	Europe s. c.
	John Chisholm ...	7-5	14th Aug.	do	...	12	1	27	2nd Regt. N. I. ...	Tonghoo.
	Henry Robert Oswald ...	7-5-12	24th do	do	...	12	1	8	Commission in Mysore.	Shemoga.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	No. in Rank.	Nominal Service to 30th Sept. 1862. Y.	M.	D.	Corps or Department.	Station.
	*John Thomas Williams ...	4	20th Dec. 1850	1st Class ...	11	9	11	....	
105	Alexander Adam Renton ...	7-9-5-12	20th Jany. 1851	do 30 ...	11	8	11	.....	Europe s. c.
	*John Anderson Cox ...	7-4	10th Feb.	do ...	11	7	18	23rd Regt. N. I. ...	Trichinopoly.
	*James Edward Dickinson ...	4-11	10th Sept.	do ...	11	0	20	Civil Surgeon ...	Rangoon.
	*Colvin Smith ...	7-5	3rd Nov.	do ..	10	10	27	40th Regt. N. I. ...	Singapore.
	*Edward D'Arcy Evezard ...	4	27th Jany. 1852	do ...	10	8	5	42nd do	Masulipatam.
110	*Francis Day ...	4-††††	26th Feb.	do ..	10	7	3	Civil Surgeon ...	Cochin.
	Charles Lee ..	4	11th Sept.	do ...	10	0	19	35th Regt. N. I. ..	Bellary.
	*Howard B. Montgomery ...	7-6-†-3-8	20th Oct.	2nd Class. ...	9	11	10	Gar. Assistant Surg...	Fort St. George.
	Joseph Marcus Joseph ...	7-9-10-4	20th Nov.	do ...	9	10	10	Civil Surgeon .	Tranquebar.
	Edward Somerset Cleveland....	7-4-11	do	do ...	9	10	10	Garrison Asst. Surg...	Bangalore.
115	William Henry Harris ...	4-11	13th Feb. 1853	do 40 ...	9	7	0	43rd Regt. N. I. ...	Cuttack.
	*William Henry Rean ...	7-4	14th May	do ...	9	4	27	Civil Surgeon ...	Chicacole.
	Henry Thompson Shaw ...	4	10th Sept.	do ...	9	0	20	Jr. Staff Assist Surg..	Palaveram.
	*Alfred Sanderson ...	7-4	20th Oct.	do ...	8	11	10	1st Regt. Cavy. Hyd. Contingent. ...	Bolarum.
	Clarence Cooper ...	7-41-2-11	20th Nov.	do ...	8	10	10	Arty. & Details. ...	Labuan.
120	James McDonald ...	5-12	14th Feb. 1854	do ...	8	7	14	Zillah Surgeon ...	Rajahmundry.
	*Samuel Jardine Wyndowe ...	4-7	24th March	do ...	8	6	7	Civil Surgeon. ...	Malabar.
	William Robert Cornish ...	4-12	1st April	do ...	8	6	0	Secretary Principal Inspector General Medical Dept. ...	Madras.
	John Simm Morton ...	7-5	10th June	do ...	8	3	20	B Troop 3rd Rl. H. A.	Secunderabad.
	Arden Hulme Beaman ...	4	do	do ...	8	3	20	.....	Europe s. c.
125	John Pearson Nash ...	7-4-12	20th do	do 50 ...	8	3	10	15th Regt. N. I. ...	Trichinopoly.
	*Henry Critchley Brodrick ...	7-4-11	2nd Sept.	do ...	8	0	28	Residency Surgeon...	Indore.
	George Stewart Watson Ogg ...	8-5-††	12th do	do ...	8	0	18	Zillah Surgeon ...	Coimbatore.
	John Shortt ...	7-4-12	20th do	do ...	8	0	10	Civil Surgeon ..	Chingleput.
	Donald Coleman McAllum ...	7-5-12	30th Dec.	do ...	7	9	2	Durbar Surgeon ...	Hyderabad.

130	William Nathan Chipperfield...	4-11	.....	3rd Jany. 1855	do	...	7	8	28	Prof. Med. College. Ag. Surgn, Eye Infy.....	Madras.
	William Pearl ...	4-11	.....	24th do	do	...	7	8	8	Arty. Horse & Foot...	Bellary.
	George Marr ...	7-5	.....	do	do	...	7	8	8	Civil Surgeon ...	Moulmein.
	*William Doyle ...	3-10	.....	do	do	...	7	8	8	Zillah Surgeon ...	Combaconum.
	Edmund Eyre Lloyd ...	4	.....	do	do	...	7	8	8	Civil Surgeon ...	Cocanada.
135	*Thomas Lowe ...	4-11-12	.....	do	do	60 ...	7	8	8	Sappers and Miners...	Dowlaishwarum.
	*Henry Webster ...	4-11-12	.....	do	do	...	7	8	8	Civil Asst. Surgeon ...	Seonee. (*Eur.S.C.*)
	James Augustus Foy ...	4-12	.....	do	do	...	7	8	8	Dept. of Dy. Inspr. Gl. of Hospls. N. Divn.	Vizagapatam.
	*Michael Cudmore Furnell ...	4	.....	7th Feb.	do	...	7	7	21	Zillah Surgeon ...	Tellicherry.
	*George Alexander Burn ...	7-5-12	.....	30th May.	do	...	7	4	2	Hyd. Contingent ...	Europe s. c.
140	Thomas Croudace ...	4-11	.....	4th Aug.	do	...	7	1	27	Civil Surgeon ...	Guntoor.
	Henry Jos. Herschel Griesbach.	7-4-12-11	.....	do	do	...	7	1	27	d.d. 38th Regt. N.I....	Secunderabad.
	Benjamin Hooke ...	4	.....	do	do	...	7	1	27	....	Europe s. c.
	Robert Dempster ...	4-12	.....	do	do	...	7	1	25	39th Regt. N.I. ...	Trichinopoly.
	John Houston ...	7-5	.....	do	do	...	7	1	25	Durbar Surgeon ...	Mysore.
145	*Henry Elmsley Busteed ...	4	.....	do	do	70 ...	7	1	27	Civil Surgeon ...	Cuddalore.
	Henry Crocker ...	7-12-4	.....	do	do	...	7	1	27	Hyd. Contingent ...	Lingasagoor.
	Richard Arnold ...	4-11	....	do	do	...	7	1	27	26th Regt. N. I. ...	Kamptee.
	*Hunter Adam ...	5	.....	do	do	...	7	1	27	Zillah Surgeon ...	Nellore.
	*William Henry Morgan ...	4*	.....	do	do	...	7	1	27	17th Regt. N. 1. ...	Palamcotta.
150	Josiah Dashwood Gillies ...	7-4-12	.....	7th Nov.	do	...	6	10	23	Zillah Surgeon ...	Tinnevelly.
	Dugald Campbell ...	7-5-12	.....	21st do	do	...	6	10	9	F. Troop H. B. Arty...	Bangalore.
	Henry King ...	7-8-12	.....	11th Jany. 1856	do	...	6	8	20	Civil Asst. Surg. ...	Baitool.
	Benjamin Williamson ...	8-5	.....	28th do	do	...	6	8	2	Hyd. Contingent ...	Hingolee.
	James Thomas Fraser ...	8-4-11	.....	20th Feby.	do	...	6	7	18	Artillery. ...	Singapore.
155	*George Bidie ...	8-4-12	.....	do	do	80 ...	6	7	18	Cattle Farm ...	Hoonsoor.
	John Groscort Reed ...	7-4	.....	do	do	...	6	7	18	Hyd. Contingent ..	Hingolee.
	John Henderson ...	7	.....	do	do	...	6	7	18	33rd Regt. N. I. ...	Bangalore.
	Hamilton McEilheron Ross ...	7-4-12	.....	do	do	...	6	7	18	Resy. Surgeon ...	Travancore.
	Charles Thick Eves ...	4-11	.....	do	do	...	6	7	18	Hyd. Contingent	Aurungabad.
160	James Sadlier Ridings ...	4	.....	do	do	...	6	7	18	....	Europe s. c.
	James Joseph Heffernan ...	6	.....	do	do	...	6	7	18	11th Regt. N. I. ...	Thayetmyoo.
	David William Trimnell ...	4-11	.....	do	do	...	6	7	18	Civil Surgeon ...	Nursingpoor.

* Graduate Calcutta Medical College.

List of Medical Officers of Her Majesty's Indian Forces.—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as No. in Rank.	Nominal Service to 30th Sept. 1862. Y.	M.	D.	Corps or Department.	Station.
	Charles Abdy Andrews ...	4	25th April 1856	2nd Class ...	6	5	6	Zillah Surgeon ...	Vizagapatam.
	John McNeale Donnelly ...	7	3rd July	do ...	6	2	28	Station ...	Mergui.
165	James Keess ...	8-10-4-12.....	4th Aug.	do 90 ...	6	1	27	Civil Establishment...	Kurnool.
	*Robert Wilson ...	7-13-11	do	do ...	6	1	27	Civil Surgeon ...	Madura.
	Robert William Cockerill ...	4-12-11	do	do ...	6	1	27	37th Regt. Grs. ...	Vizianagrum.
	*Charles Robertson ...	7	do	do ...	6	1	27	Zillah Surgeon ...	Masulipatam.
	*William Charles Elliot ...	7-5	do	do ...	6	1	27	7th Regt. N. I. ...	Kamptee.
170	Alexander Gamach ...	7-5	do	do ...	6	1	27	Port Blair. ..	Andamans.
	Jacob Wilkins ...	7-4	do	do ...	6	1	27	28th Regt. N. I. ...	Rangoon.
	*Thomas Gwynne Howell ...	4	12th Nov.	do ...	5	10	18	13th do ...	Trichinopoly.
	*James Ross ...	8-5	29th Jany. 1857	do ...	5	8	3	.....	Europe s. c.
	*Samuel Thomas Heard ...	7-5-12	do	do ...	5	8	3	A. Bat. 3d Rl. H. Brig.	Kamptee.
175	*William Arnold Smith ...	7-4	do	do 100 ...	5	8	3	36th Regt. N. I. ...	Kurnool.
	*William Frederick deFabeck...	4	do	do ...	5	8	3	Civil Surgeon ...	Chittoor.
	*George Edward Whitton ...	8-6-12-†	do	do ...	5	8	3	C. Bat. 3d Rl. H. Brig.	Bangalore.
	*Thomas Beaumont ...	7-6	do	do ...	5	8	3	In Medical charge 3rd Regt. Central India Horse ...	Goonah.
	*William Pierce Kelly ...	6	9th June	do ...	5	3	21	3rd Regt. P. L. I. ...	Cannanore.
180	William Richard Grylls ...	7-4-12	4th Aug.	do ...	5	1	27	Dist. of Chindwarrah	Nagpore.
	*James Thomas Joseph Doyle..	3	10th Dec.	do ...	4	9	21	Zillah Surgeon. ...	Cuddapah.
	Henry John Beach ...	4-11	27th Jany. 1858	do ...	4	8	5	District of Chandah....	Nagpore.
	*John Massey Miller ...	5-7	13th April	do ...	4	5	17	Engineers Dept. ...	Kistna Anicut.
	William Farquhar ...	7-5	28th May	do ...	4	4	4	Artillery ...	Singapore.
185	*John Law ...	7-4-11	do	do 110 ...	4	4	4	Dt. of Dy. Ins. Genl. of Hospitals Nag. Force	Nagpore.
	George Hamilton Alexander ...	7-5-12	do	do ...	4	4	4	....	Europe s. c.
	Walter Fry ...	4	29th June	do ...	4	3	1	21st Regt. N. I. ...	Vellore.

	William John Busteed	...	5-12	.....	23rd July		do	...	4	2	9	Dt. of Dy. Ins. Genl. of Hols. Sn. Division.	Trichinopoly.
	William Farquhar Davis	...	7-4-12-11	.....	do		do	...	4	2	9	17th Brig. Rl. Arty...	St. Thomas' Mt.
190	Samuel Rule	...	7-4	.....	do		do	...	4	2	9	Zillah Surgeon ...	Mangalore.
	James McDonald Houston	...	7-4	.....	do		do	...	4	2	9	Medl. Charge Engineer Dept ...	Upper Godavery.
	William Rowland Roberts	...	7-14	.....	do		do	...	4	2	9	Dept. of Depy. Insp. Genl. Nag. Force...	Kamptee—Under the Govt. N. W. Provinces.
	John Murray	...	7-5-12	.....	do		do	...	4	2	9	.....	Europe s. c.
	John Bilderbeck	...	15-4-12	.....	10th Feb.	1859	do	...	3	7	18	No. 3 (Lt. Field) Bat. 17th Brig. Rl. Arty	Cannanore.
195	Peter William Marriott	...	4-11	.....	do		do	120 ...	3	7	18	....	Europe s. c.
	Robert Edmund Pearse	...	4	.....	do		do	...	3	7	18	.....	Europe s. c.
	George Dalziel Riddell	...	5	.....	do		do	..	3	7	18	H. M.'s 108th Regt ...	
	Æneas McLeod Ross	...	5	.....	do		do	...	3	7	18	Zillah Surgn. ...	Honore.
	Joseph Dougall	...	5-12	....	do		do	...	3	7	18	No. 2 (Lt. Field) Bat 20th Brig. Rl. Arty.	Waltair.
200	Benjamin Thomas Suffrein	...	4-12-11	.....	27th July		do	...	3	2	5	H. M. Str. "Coromandel." ...	
	Joseph Francis Barter	...	5-12	.....	do		do	...	3	2	5	Dt. Sappers & Miners.	Muttoor Hill.
	John FitzGerald	...	6	.....	do		do	...	3	2	5	d. d. No. 1 Bat. 67th Brig Rl. Arty ...	Penang.
	Andrew Fergusson	...	7-5	.....	do		do	...	3	2	5	d. d. Artillery ...	Singapore.
	Hugh Griffith	...	4-12-11	.....	do		do	...	3	2	5	Dt. of Dy. Insp. Genl. Pegue Division. ..	Rangoon.
205	Francis Thomas Bayntun	...	4	.....	26th Oct.		do	130 ...	3	2	5	....	Europe s. c.
	George Williamson	...	7-5	.....	20th Jany.	1860	do	...	3	2	5	1st Infy. Hyd. Cont...	Bolarum.
	Charles Robert Geo. Parker	...		.....	do		do	...	2	8	12	Madras Fusiliers ...	Bangalore.
	Hugh Ronaldson Handyside	...		.....	do		do	...	.....			....	Europe s. c.
	Daniel Kearney	...		.....	do		do	...	.....			d. d. Artillery ...	Rangoon.
210	Francis Orde Bigg Wither	...	4-11	.....	25th do		do	...	.....			d. d. No. 2 Bat. 23rd Brig. Royal Arty ...	Jaulnah.
211	Frederick Duckworth	...	7	.....	1st Oct.	1861	do	136 ...	.....			23rd Brig. Rl. Arty...	Secunderabad.

List of Medical Officers of Her Majesty's British Forces.

No.	Names.	Professional Titles.	Date of Commission.		Service to 30th Sept. 1862.	Corps or Department.	Station.
			Regimental.	Army.			
	Deputy Inspector General of H. M. Hospitals.						
1	George S. Beatson	M.D	.....	31st Dec. 1858	.....	.....	Bangalore Hd.Qrs.
	Staff and Regimental Surgeons.						
	Charles Bush Hearn		16th Nov. 1849	.....	.....	1st Royal Regt.	Secunderabad.
	Thomas Best		23rd do 1859	13th April 1852	.....	68th do	Rangoon.
	Huntly George Gordon†	M.D.	22nd do 1853	.....	.....	69th do	Fort St. George.
5	James Macbeth†	M.D.	13th Dec.	12th Aug. 1853	.....	74th Highlanders	Bellary.
	Miah William Murphy		3rd March 1854	.....	.....	91st Regiment	Kamptee.
	William Holmes Jephson	M.D.	12th Jan. 1855	.....	.....	1st Drag. Guards	Bangalore.
	J. A. Fraser		.....	.....	.....	18th Royal Irish	Secunderabad.
	G. Waterloo Pennington Sparrow		6th July	.....	.....	60th Rifles	Tonghoo.
10	James Kellie	M.D.	2nd Oct. 1857	.....	.....	17th Lancers	Secunderabad.
	William Sim Murray	M.B.	24th June 1859	.....	.....	66th Regiment	Cannanore.
	Staff and Regimental Assistant Surgeons						
	Frederick Bone	M.D.	21st Oct. 1853	.....	.....	.....	Not joined.
	David Cullen	M.D.	13th Nov. 1860	1st Sept. 1854	.....	17th Lancers	Secunderabad.
	John Wild Hulseberg		14th Dec.	.....	.....	1st Royal Regiment	do
15	Joseph Watts		.....	5th April 1855	.....	1st Drag. Guards	Depôt Surg. Poonamallee.
	Richard Uniacke Cashman	M.D.	9th July. 1857	18th May	.....	Royal Artillery	Secunderabad.
	Samuel Fuller		2nd Oct. 1860	23rd July	.....	17th Lancers	do
	Clement Williams		5th Jany 1855	.....	.....	68th Regiment	Rangoon.
	James Robert Crawford		2nd April	.....	.....	69th do	Fort St. George.
20	William Robert Burkitt		9th do	.....	.....	74th Highlanders	Bellary.

	James Macartney ...	.....	6th Oct.	.....	.....	60th Rifles ...	Europe s. c.
	Edward L. McSheehy ...	M.D.....	14th do	27th May	.....	1st Dragoon Guards..	Bangalore.
	Arthur Chester ...	.....	13th July 1858	1st Aug. 1857	.....	74th Highlanders ...	Bellary.
	Francis Madden ...	.....	13th do	19th Oct.	.....	69th Regiment ...	Fort St. George.
25	John Henderson Whittaker...	.....	6th Aug. 1857	19th Oct.	.....	69th Regiment ...	Madras.
	Frederick Ffolliott ...	.....	1st July 1858	.....	.....	18th Royal Irish ...	Secunderabad—absent on duty.
	Augustus Oliver Applin ...	.....	3rd Oct.	.....	.....	68th Regiment ...	Rangoon.
	John Henry Halked Tothill.....	.....	13th June 1859	22nd June 1858	.....	18th Royal Irish ...	Europe c. s.
	Hugh M. Macbeth ...	.....	7th Sept. 1858	22nd do	.....	91st Regiment ...	Kamptee.
30	Robert Gillespie ...	M.D.....	31st Dec.	1st Sept.	.....	74th Highlanders ...	In Medl. charge at Ramandroog.
	Mathew Lawrence White ...	.....	1st June 1859	22nd do	.....	1st Royal Regt. ...	Secunderabad.
	James M'Creevey ...	M.D.....	31st Dec. 1858	.....	.....	66th Regiment ...	Cannanore.
	Alexander C. McTavish ...	.....	.....	12th Jany 1859	.....	60th Rifles ...	Tonghoo.
	C. Codrington ...	.....	28th Oct. 1860	13th June.	.....	68th Regiment ...	Rangoon.
35	George Alexander Moorhead...	.....	5th Aug. 1859	.....	.....	66th do ...	In Medl. Ch Det. Malliapooram.
	William Orr ...	.....	4th do 1860	.....	.....	18th Royal Irish ..	Secundrabad.
	R. O. Hayden ...	.....	15th Sept. 1859	.....	.....	60th Rifles ...	Tonghoo.
	F. W. Wade ...	.....	28th do	.....	.....	do ...	do
	N. Avent ...	.....	9th April 1861	.....	.....	66th Regiment ...	Cannanore.
40	Richard Henry ...	.....	15th Feb.	.....	....	91st do ...	Kamptee.
41	William Traill ...	M.D.....	19th Jan.	22nd June 1858	.....	91st do ..	do

† Surgeons Major.

List of Veterinary Officers of Her Majesty's Indian Forces.

No.	Names.	Date of Commissions.	Corps or Stations.	Remarks.
	SURGEONS, 10.			
1	Ed. Boghurst Dawson...	28 June 1845	.....	Australia s. c.
	Joshia M. Cullimore ...	7 August 1848	d. d. Rl. Arty. ...	Nagpore Force.
	*Thomas Aston ...	4 Dec.	.....	
	Rowland Hill Usher-wood Holloway ...	26 do. 1850	2d Light Cavalry	
5	James Thacker ...	29 do.	Horse Artillery....	
	Thomas Pritchard ...	2 Oct.	No. 4. Horse Field Battery.	Mount.
	Daniel Cullimore ...	27 Dec. 1853	.....	Europe s. c.
	Frederick George Shaw.	6 Feb. 1857	Rt. Depôt Oossoor.	
	George Western	25 April.	4th Light Cavalry.	
10	——			

Veterinary Officers of Her Majesty's British Forces.

1	F. Delany	5th Sept. 1844	1st Light Cavalry	Bangalore.
	J. W. Callow ...	14th Dec. 1857	Royal Arty. ...	Secunderabad.
3	John Ferris ...	17th July 1858	17th Lancers ...	do

Native Surgeons.

No.	Names.	Date of Rank.	Stations, &c.
1	C. Bauloo Moodelly ...	16 April 1852	Zillah of Trichinopoly.
	S. Jesudasen Pillay ..	do	Black Town—Madras. Municipal Commissioner.
	S. B. Kanagaroyen ...	20 May 1856	Pullachy Civil Dispensary.
	P. S. Mootoosawmy Moodlr.	do	Zillah of Combaconum.
5	Francis Appavoo ...	4 do 1857	Assistant Conservator of Forests.
	Moodeen Sheriff ...	5 do 1858	Civil Dispensary, Triplicane.
	M. Iyasawmy Pillay ...	do	do Cuddapah.
	I. Raujantheram ...	do	do Cuddalore.
	T. Ruthnum Modelliar ...	do	do Nellore.
10	Y. Anthony Pillay ...	do	do Madura.
11	R. N. Manikum ...	12 do 1859	do Salem.

Sub-Assistant Surgeons.

1	John Alcock, Actg ...	15 Oct. 1861	Pegu Sapper Battalion.
	D. R. Thompson, M. D. ...	23rd May, 1862	3rd Class Supt. of Vaccination, Presidency.
3	S. Pulney Andy, M. D. ...	do	Actg. do Malabar.

List of Medical Warrant Officers of H. M.'s Indian Forces.

No.	Names.	Date of Rank.	Stations, &c.
	Sr. APOTHECARIES.	Apothecary.	
1	Arthur Harris ...	4 Feb. 1831	d. d. Garrison of Trichinopoly.—Has the Local Rank of Asst. Surgeon.
	George Haldwell ...	2 June 1832	Garrison of Bangalore.
	Samuel Mason ...	27 August 1833	Resident Medical Officer of the Lunatic Asylum.—Has the Hon. Rank of Asst. Surg., with its relative Rank of Lieut.
	Henry Xavier‡ ...	19 June 1836	Under the Comssr. in Mysore.
5	*P. A.* Mark Sterling‡ ..	7 Feb. 1840	Port and Marine Surgeon's Dept.
	do George Dewsnap‡	15 May 1857	Garrison of Fort St. George.
	APOTHECARIES, 46.		
	do David Scot Turner ...	2 Sept 1842	Garrison of Vizagapatam.
	do *Gustin Wilson ...	1 Nov.	Secunderabad.
	do Thomas Good ...	6 Feb. 1844	Attached to the Commissioner, Tenasserim Provinces.
10	*do* *George Smith ...	27 May 1845	Garrison of Cannanore.
	do Bartholomew Woutersz	24 Feb. 1848	Under the Comssr. in Mysore.
	do Amond Doutre ...	24 Sept.	General Hospital, Presidency.
	do John Mathews ..	12 June 1849	Under the Coltr and Magistrate Chingleput.
	do Robert Thompson ...	15 March 1850	Kotagherry.
15	*do* Thomas King ...	24 Dec.	Under the Comssr. in Nagpore.
	do Joseph North ...	25 July 1851	Garrison of Bellary.
	do Henry William King...	1 Nov.	Medical Stores, Presidency.
	do *Peter McIntyre ...	9 May 1854	Dept. of Depy. Inspector General of Hospitals, Malabar & Canara.
	do T. M. Francke ...	21 Nov.	Cantonment of Kamptee.
20	*do* William Barnes ...	22 May 1855	Mysore Commission.
	do Samuel Jones ...	15 June	Penitentiary, Madras.
	do *Robert Huffton ...	28 Nov.	Doing duty Female Asylum.
	do John Alcock ...	15 July 1856	Actg. Sub. Asst. Surg., Pegue Sap. Bat.
	do *John Charlesworth ...	21 Oct.	Civil Establishment, Sircy.
25	*do* George Wrightman ...	17 do	Under the Comssr. Mysore.
	do John Aitkins ...	July 1857	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	do John William Clark ...	27 April 1858	Dept. of Depy. Inspr. Genl. of Hospls. Presy., to do duty Lunatic Asylum.
	do Abel Grove ...	do	Native Infirmary.
	do George Macqueen ...	.....	Dept. of Depy. Insp. Genl. of Hospls. Nagpore Force.
30	*do* John Cunningham ...	29 March	d. d. Government House.
	do Joseph Swaris ...	16 Sept.	d. d. Dept. Depy. Inspr. Genl. of Hospls., N. Divn.—doing duty Masulipatam—St. Thos'. Mt. and Bangalore s. c.

P. A. signifies passed examination as Apothecary.

‡ Senior Apothecaries in receipt of higher allowances.

List of Medical Warrant Officers of H. M.'s Indian Forces.—*(Continued.)*

No.	NAMES.	Date of Rank.	Stations, &c.
	APOTHECARIES.		
	P. A. Christopher Oliver ...	12 Oct. 1859	Dept. of Depy. Inspr. Genl. of Hospls. Presy. Division.
	do John Davall ...	14 Feb. 1860	d. d. Dept. of Depy. Inspr. Genl. of Hopls. Mysore Division.
	do *John Tyrrell ...	27 July	d. d. Dept. of Depy. Inspr. General of Hospitals, Presy.
35	*do* *Archibald Spiers ...	31 August	d. d. Civil Dispy., Raneepet.
	do J. F. Rodgers ...	19 Dec.	d. d. Dept. of Depy. Inspr. Genl. of Hospls. Northern Division. E. Coast and Neilgherries s. c.
	do Charles Evers ...	16 April 1861	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Southern Divn.
	do Richard Quintin ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Nagpore Force.
	do Thomas B. Turnbull....	23 do	Eye Infirmary.
40	Daniel Gillespie† ...	20 do 1859	Department of Deputy Inspector General of Hospitals Hyderabad Subsidiary Force.—Belgaum s. c.
	do Charles Doig. ...	25 August 1857	Police Estab. Russelcondah.
	do George Honor ...	21 Mar. 1862	Dept. of Depy. Insp. Genl. of Hospls., Mysore Division.
	do *Henry C. Clarke ...	6 May	Do. do. N. Divn.
	do Frederick Pearl ...	27 do	Do. do. Hyd. Sub. Force.
45	*do* George Pereira ...	8 Aug.	d. d. 1st Battalion Artillery.
46	*do* Joseph Miller ...	15 do	H. M.'s 1st Royal Regt. of Foot.
	2ND APOTHECARIES, 33.		
1	*P. A.* Thomas Horrox ...	16 Oct. 1857	Ganjam Survey.
	*Edmond White ...	do	H. M. 1st Royal Regt. of Foot.
	do John Lloyd ...	do	Collector's Establishment, Salem.
	do *James White ...	do	d. d. Arty. at Rangoon.
5	William Miles ...	do	H. M. 18th Rl. Regt. Madras.—s. c.
	do Thomas Leonard ...	do	Ganjam Survey Party.
	do Samuel Newnan ...	do	d. d. General Hospital.
	do John Gorman ...	do	Lying-in-Hospital, Madras.
	do William Leach ...	do	68th Regiment of Foot.
10	*P. S. A.* Wm. K. Kierulf ...	27 April 1858	2nd Battalion Artillery, Secunderabad, Ceded Dists. and Ramandroog s. c.
	do Henry H. Lynsdale...	do	Civil Dispensary General Hospital.
	do Patrick J. Finley ...	9 July	23rd Brig. Rl. Arty. Secunderabad.
	do Lazarus Dyce ...	31 Dec.	H. M. 74th (Highlanders) Regt. of Foot.
	do Francis Meneaud ...	25 Feb. 1859	d. d. 1st Madras Fusiliers.
15	*do* James West ...	29 March	H. M. 66th Regiment.
	*Samuel B. Kemp¶...	16 Oct. 1857	Dept. of Depy. Inspr. Genl. of Hospls. Ceded Districts.

P. A. signifies passed examination as Apothecary.

† Supernumerary.

P. S. A. signifies passed examination as Second Apothecary.

¶ Under orders of the Supreme Govt. for employment with European Corps in Bengal.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	2ND APOTHECARIES.		
	Patrick Heron† ...	17 June 1857	60th Regt. Rifles.
	John Edwin Ross†...	12 Oct.	Depôt of Poonamallee.
	P. S. A. *George Drake ..	27 Sept. 1861	H. M.'s 105th Regt. of Foot.
20	*do* *James Hargreaves...	13 August	Station Hospital, Malacca.
	do *William Powell ...	29 October	H. M.'s 17th Lancers.
	do Wm. Douglas Master	21 March 1862	H. M. 108th Regt. of Foot.
	do *Daniel Henry Gray.	6 May	d. d. H. M. 18th Regt. of Foot.
	do Henry Wale ...	13 do	H. M. 69th Regt. of Foot.
25	*do* Henry Callaghan ...	27 do	H. M's. 1st Dragoon Guards.
	do *R. F. Stephenson ...	27 June	17th Brigade Royal Artillery.
	do *Francis B. Pereira...	27 do	Mysore Commission.
	do John Middleton ...	18 July	To do duty Collr.'s Est., Bellary.
	do *John Asiaticus Hill Wahab ...	8 Aug.	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Nagpore Force.
30	*do* T. Humphreys Carr..	15 do	In charge of the Civil Station and Dispy. at Raepore.
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	——		
33	——		
	ASST. APOTHECARIES, 197		
1	*P. S. A.* *Alphonso White ...	2 Feb. 1848	Ghooty.
	do *ThomasRichardPeck	do	Lunatic Asylum.
	do John W. McKenzie...	do	3rd Madras European Regiment.
	do W. T. Chillingsworth.	28 March	Dept. of Depy. Inspr. Genl. of Hospls. Southern Division.
5	*do* James Thomas ...	18 August	Chintadrepettah Dispensary.
	do Abraham Saviel ...	24 Sept.	Doing duty at Tanjore.
	do *John Joseph Wood.	2 Oct.	Asst. to Professor of Botany and Mat. Med. in the Med. College.
	do Henry Hitchock ...	11 do	Cochin.
	do *Robert Donaldson...	26 Dec.	d. d. Pensioners, Cuddalore.
10	Samuel Sausman ...	6 March 1849	Dept. of Depy. Inspr. Genl. of Hospls. Pegu Division.
	do Joseph O'Keeffe ...	3 May	20th Brigade R. A.
	do Henry Godbier ...	12 June	Medl. Stores, Presidency.
	do James Lears ...	14 Sept.	d. d. Sebundies at Palcondah.
	do John Bornshin ...	8 Jany. 1850	4th Regt. N. I.
15	*do* George A. Trutwein..	15 March	Triplicane Dispensary.
	do J. Alexander Beckett.	26 do	d. d. Garrison of Vellore.
	do *William Lewis ...	17 June	Dept. of Deputy Inspr. Genl. of Hospitals, Nagpore Force.
	do *Samuel Hall ...	2 July	Public Cattle Depôt, Hoonsoor.
	*Austin Ince ...	29 do	A Battery Horse Artillery.
20	*Michael Netscher ...	6 August	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.

P. S. A. signifies passed examination as Second Apothecary.

† Supernumerary.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.		Stations, &c.
	ASST. APOTHECARIES.			
	P. A. *Laurence Carthy ...	9 Sept.	1850	Andaman Islands, with local rank of 2nd Apothecary.
	*David Stewart ...	27 do		Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	George Bamford ...	24 Dec.		Dispensary 2nd District.
	Charles Robertson ...	22 April	1851	Dt. of Dy. Ip. Gl. of Hos., N. Dn.
25	George Nicholls ...	22 May		Garrison of Bellary.
	*Thomas Quinn ...	25 July		Garrison of Vizagapatam.
	Robert Alexander Leonard ...	14 Nov.		H. M. 68th Regiment of Foot.
	Henry O'Flaherty ...	5 June	1852	Andaman Islands, with local rank of 2nd Apothecary.
	Charles James Daly ...	do		B Troop Horse Artillery.
30	Richard Wilkins ...	do		Demonstrator of Anatomy and Curator of the Museum at the Med. College.
	*Henry Hackett ...	29 do		d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Peter Anderson ...	21 August		d. d. Ramandroog.
	*J. Howard, M. D. & M. R. C. S., [Eng.] ...	27 do		Md. charge of the Zillah of Ganjam.
	*John Sausman ...	do		Dept. of Depy. Inspr. Genl. of Hos. Sn. Division, d. d. at Paumbem.
35	*William Thomas ...	1 Oct.		Do. do. Nagpore Force.
	Charles Smith ...	10 Dec.		d. d. Artillery, at Thayetmyoo.
	John Ringrow ...	17 do		Andaman Islands, with local rank of 2nd Apothecary.
	Thomas Joseph Riely ...	do		Doing duty Dept. of Deputy Inspr. Genl. of Hospitals, Hyderabad Subsidiary Force.
	John Wayne ...	31 May	1853	d. d. Dept. of Deputy Ins. Genl. of Hospitals, Mysore Division.
40	William Osman ...	7 July		Native Inf. Depôt, Palaveram.
	Charles Pettigrew ...	do		Mysore Commission.
	James Karney ...	do		Dt. of Dy. Ins. Genl. of Hos. Sn. Divn., d. d. Arty. Trichinopoly.
	Samuel Wells, M. D. ...	3 May	1854	Oosoor.
	Daniel Truth O'Keeffe ...	do		Artillery at Penang.
45	*George Frederick Carpenter..	do		47th Regt. N. I.
	Patrick Kinsley ...	do		Male Asylum, Madras.
	Ambrose D'Rosa ...	do		Civil Hospital, Moulmein.
	George Watson ...	do		Garrison of Bangalore.
	Joseph Hackett ...	do		Pauper Hospital, Singapore.
50	Walter Hugh Yarde ...	9 do		Under the orders of the Officer Comg. Pegue Divn. at Menghie.
	John Walker ...	30 do		H. M. 74th Highlanders.
	Robert Harvey ...	28 April	1855	Asst. to the Professor of Chemistry in the Med. College, Madras.
	Caleb St. John Lawrence ...	do		Garrison of Cannanore.
	Thomas George Eade ...	do		Province Wellesley.
55	John James Henry Everard ...	do		Eur. Infy. Vet. Co. Vizagapatam.

P. A. Signifies passed examination as Apothecary.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	George Christopher Brown ...	28 April 1855	Kimedy.
	Francis Henry Horatio Smith.	do	Medical Stores Presidency.
	Miles Craggs ...	do	Cantonment of Kamptee.
	Fred. Agtus. Adolphus Vint...	do	No. 7 Horse Field Battery.
60	Robert Stewart ...	10 July	Convalescent Depôt, Wellington.
	Edward Samuel Mayley ...	28 do	Dept. of Depy. Ins. Genl. of Hos. Northern Div.
	Joseph Victor Duckworth ...	21 May 1856	Dept. of Depy. Inspr. General of Hospitals Hyd. Sub. Force.
	John J. Leonard Wheatley ...	do	13th Regiment N. I.
	Anthony Lawrence Xavier ...	do	Andaman Islands, with local rank of 2nd Apothecary.
65	Charles D'Santos ...	do	General Hospital.
	John Hardaker ...	do	Dept. of Depy. Inspr. General of Hospitals, Northern Division.
	Paul George Paul ...	do	Do. do.
	John Edward Lillywhite ...	do	Under the Straits Government.
	Thomas Cripps ...	do	19th Regiment Native Infantry.
70	John Green ...	5 do 1857	H. M. 1st (Royal) Regiment of Foot.
	William Karney ...	do	Sappers and Miners.
	Henry Stagges ...	do	Dept. of Depy. Insp. General of Hospitals, Pegue Division.
	Thomas Ward ...	do	17th Regiment Native Infantry.
	George Wilkie ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
75	Robert Henry Legge ..	do 1856	d. d. Dept. of Dy. Inspr. Genl. of Hospitals H. S. Force.
	Easton Alfred Morris ...	do 1857	Dept. of Depy. Inspr. General of Hospitals, Ceded Districts.
	Henry Joseph Scott ..	do	23d Brigade Royal Artillery Secunderabad.
	George Shunker ...	do	22nd Regiment N. I.
	Samuel Johnston ...	do	Body Guard.
80	Leonard Walter Lincoln ...	do	13th Regt. N. I.
	*John Sausman ...	16 do	Garrison of Vellore.
	James Joseph O'Flynn ...	do	25th Regiment N. I.
	Henry Boon ...	do	H. M.'s 69th Regt. of Foot.
	James Albert Falloon ...	do	12th do
85	James Walker ...	do	d. d. Details at Kamptee.
	*William Hamilton ..	3 August	Doing duty Dept. of Depy. Inspr. Genl. of Hos., Pegue Division.
	William Gilbert Wright ...	do	7th Regiment N. I.
	William Joseph Gray ...	do	2nd Regiment L. C.
	Edmond O. Claudius Vint ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
90	James McFarland ...	do	Dept. of Depy. Insp. Genl. of Hos., Mysore Divn.
	*John Robert Carey ...	do	Doing duty Tambacherry Pass.
	Thomas Everard ...	do	Eur. Infy. Camp, Vizagapatam.
	*Thomas Gabriel Devine ...	do	Malabar and Canara.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	Richard James Ramsbottom...	3 August 1857	Dept. of Depy. Inspr. Genl. of Hospls., Mysore Division, Bellary s. c.
95	James Hugh McClosky ...	do	Colonial Apothecary, Labuan.
	George Watson ...	do	Doing duty 2nd European L. I.
	William Watson ...	do	H. M. 66th Regt. of Foot, Detachment at Malliapooram,—Neilgheirries s. c.
	John Felix James Borgonha...	do	Station Hospital, Singapore.
	Edward James Heiden ...	do	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Northern Divn.
100	James George Ashworth ...	do	Depôt of Poonamallee.
	Thomas Tudor Van Hams ...	do	33rd Regiment N.I.
	James Ringrow ...	25 do	Dept. of Dy. Inspr. Genl. of Hos. Malabar and Canara.
	John Isacke ...	do	17th Brigade Royal Artillery.
	Daniel Callaghan ...	1 October	23rd Regiment N. I.
105	John Norman ...	do	Dept. of Dy. Ins. Genl. of Hos. Pegue Divn.
	Edwin Atkinson ...	do	H. M. 17th Lancers.
	Alfred Wright ...	do	C Troop Horse Artillery.
	James John Watts ...	do	Dt. of Dy. Ins. Genl. of Hos. Northern Divn.
	Benjamin Lewis Xavier ...	do	31st Regiment N. I.
110	Thomas Kelly Hall ...	do	Dept. of Depy. Insp. Genl. of Hospitals, Pegue Division.
	Charles Thipthorp ...	do	d. d. 20th Brig. Rl. Arty.
	Thomas V. S. Aitkins ...	do	D Troop Horse Artillery.
	Francis Brown ...	19 Jany. 1858	d. d. R. Arty.—Secunderabad, Trichinopoly & Dindigal s c. till 31st Oct. 1862.
	Alexander Trutwein ...	1 June	27th Regiment N. I.
115	Christian Thomas Browne ...	24 August	2nd do
	George Marrow ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Thomas Edwin Judge ...	do	F Battery Horse Artillery.
	James Wood ...	do	d. d. Dept. of Depy. Insp. Genl. of Hopls. Nagpore Force.
	*Charles William Baker ...	do	16th Regt. N. I.
120	Christian Michael Antonio ...	do	d. d. Department of Deputy Inspector General of Hospitals, Presidency.
	*George Bayley ...	do	42nd Regt. L. I.
	Richard Alexander Bowie ...	do	Medical Stores, Presidency.
	Reuben John Anderson ...	do	3rd Regiment L. I.
	Richard Wells ...	do	Doing duty 20th Regt. N. I.
125	James Theodore Gilles ...	do	H. M's. 91st Regiment.
	Michael Wade ...	do	Eur. Arty. Vet. Co., Palaveram.
	*George William Phillips ...	do	Dept. of Depy. Inspr. Genl. of Hospitals. Hyd. Sub. Force, d. d. Batteries Royal Artillery.

List of Medical Warrant Officers of H. M.'s Indian Forces.—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	Jonas Isaac Laffrey ...	24 August 1858	34th Regt. L. I.
	George Edwin King ...	do	43rd Regiment N. I.
130	William Day Stewart ...	9 Nov.	d. d. on board Str. "Coromandel."
	Edwin Gustavus Scott ...	24 Dec.	29th Regiment N. I.
	Francis D'Sylva ..	1 Feb. 1859	d. d. 24th do
	Jonathan Chadwick ...	do	41st do
	Thomas Baracliffe ..	20 April 1860	Collector's Dept. Vizagapatam.
135	Theophilus Todd ...	5 May	3rd Regiment L. I.
	James Delany Jones ...	do	11th do N. I.
	Joseph Johnson ...	do	28th do
	John Edwin Xavier ...	do	d. d. Department of Deputy Inspector Genl. of Hospitals, Northern Division.
	Edmund Trutwein ...	do	35th Regiment N. I.
140	Charles Trutwein ...	do	44th do
	Charles Jordon ...	do	24th do Madras s. c.
	Stephen Chalke ...	do	52nd do
	Alfred James Butterfield ...	do	26th do
	John McDiarmid ...	do	32nd do
145	James Anderson ...	do	9th do
	George John Duckworth ...	do	d. d. Department of Deputy Inspector General of Hospitals, Ceded Districts.
	George Albert Watts ...	do	6th Regiment N. I.
	Richard Hamilton ...	do	Dept. of Depy. Inspr. General of Hospitals, Hyd. Sub. Force.
	William Johnston ...	do	39th Regiment N. I.
150	Henry Wells ...	do	Pegue Police Battalion.
	David Arklie ...	29 June	1st Regiment N. I.
	Thos. Mergler ...	3 August	d. d. Dept. of Depy Inspr. Genl. of Hospls. Northern Division.
	Edward Gillson ...	5 May	4th do L. C.
	Jeremiah Trutwein ...	7 do 1861	d. d. H. M. Steamer "Dalhousie."
155	Daniel O'Leary ...	do	30th Regiment N. I.
	John Bazely ...	do	14th do
	Albert Benjamin Court ...	do	15th do
	William Andrew Harrison ...	do	38th do
	Christopher D'Rose ...	do	37th Grenadiers.
160	William Henry Eade ...	4 June	3rd Regiment L. I.
	James Peter Robinson Thoy...	28 do	H. M.'s 18th Regt. Royal Irish.
	Frederick William S. Newland	16 July	Medical Stores, Presidency.
	Issac McDermott ...	25 do	d. d. 8th Regiment N. I.
	Simeon Steinhoff ...	13 August	10th do
165	Samuel Edward Carrapeitt ...	do	d. d. General Hospital.
	Francis Green ...	15 do	d. d. 17th Brigade Artillery.
	Colin Alfred Leary ...	26 do	19th Regiment N. I.
	Charles Robert Meneaud ...	1 September	1st do L. C.
	Charles Samuel Aitkins ...	27 do	36th do N. I.
170	William Peter Oliver ...	29 October	18th do
	Henry Hawkes ...	1 November	d. d. Native Infantry Depôt Palaveram.

List of Medical Warrant Officers of H. M.'s Indian Forces.—*(Continued.)*

No.	NAMES.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	Henry Whitwell ...	27 June 1862	Under the orders of the Depy. Inspr. Genl. of Hospls., Presy.
	George Callaghan ...	18 July	d. d. N. Infy. Depôt, Palaveram.
	Henry Smith ...	8 August	d. d. Depôt, Poonamallee.
175	Henry Tallent ...	15 do.	d. d. Garrison Fort St. George.
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	PASSED MEDICAL APPRENTICES.		
1	Richard Stratheden Dawson...	25th April 1862	d. d. H. M.'s 68th Regiment.
	Cornelius Murphy ...	do	d. d. H. M.'s 74th Highlanders.
	Charles Nelson Cumberland Perry ...	do	d. d. Garrison of Vizagapatam.
	Thomas Dixon ...	do	d. d. H. M.'s 1st Dragoon Guards.
5	Samuel Beaver ...	do	d. d. H. M.'s 102nd Regiment.
	John Holman ..	do	d. d. 69th do
7	Peter Wynne Reeves ...	do	d. d. 31st Regiment L. I.

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